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AUTHOR	Patterson, S. Douglas; And Others
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ABSTRACT

A project was conducted to develop an adult vocational education competency-based program using a research-based instructional systems design and to assess the application of competency-based research products being developed by the Vocational-Technical Education Consortium of States in the development of adult vocational education programs. Specific objectives were (1) design a model for implementing competency-based adult vocational education; (2) develop a plan for training adult vocational instructors in developing and using competency-based instruction; (3) train ten adult vocational instructors to criterion levels of performance in competency-based instruction; (4) implement competency-based instruction in forty adult vocational classes; and (5) complete an evaluation study of the effects of using competency-based instruction in adult education. A three-group experimental design was utilized to test two procedures for implementing performance-based instruction for adults. Research-based PBI (Performance-Based Instructional) materials were utilized in designing the vocational instructional program. Each group conducted vocational education short courses for adults. The achievements and attitudes of the adult learners were analyzed and the attitudes of the instructors were analyzed. The twenty-six vocational instructors and 300 adults who received PBI training indicated a strong attraction to the performance-based concept. (Program materials are appended.) (Author/CT)

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PERFORMANCE-BASED

ADULT VOCATIONAL EDUCATION

S. Douglas Patterson, Mickey N. Humphries, Glen L. Spivey

ALABAMA STATE DEPARTMENT OF EDUCATION
DIVISION OF VOCATIONAL EDUCATION
858 STATE OFFICE BUILDING
MONTGOMERY, ALABAMA 36130

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Montgomery, Alabama
May 1978

Douglas Patterson
Glen Spivey
Mickey Humphries

PROJECT ABSTRACT

PROJECT NUMBER: 498AH60032

TITLE: Performance-based Adult Vocational Education (PAVE)

INVESTIGATORS: Douglas Patterson, Mickey Humphries, Glen Spivey, Larry Walters, Norma Brewer

ORGANIZATION: Division of Vocational Education
Alabama Department of Education
State Office Building
Montgomery, AL 36130
(205) 832-3476

GRANT PERIOD: July 1, 1976 - January 30, 1978

OBJECTIVES OR PURPOSES

The purposes were to develop an adult vocational education competency based program using a research based instructional systems design and to assess the application of competency based research products being developed by the Vocational-Technical Education Consortium of States in the development of adult vocational education programs.

Specific objectives were:

1. Design a model for implementing competency based adult vocational education.
2. Develop a plan for training adult vocational instructors in developing and using competency based instruction.
3. Train ten adult vocational instructors to criterion levels of performance in competency based instruction.
4. Implement competency based instruction in 40 adult vocational classes.
5. Complete an evaluation study of the effects of using competency based instruction in adult vocational education.

PROCEDURE OR APPROACH

A three group experimental design was utilized to test two procedures for implementing performance based instruction for adults. Research based PBI materials were utilized in designing the vocational instructional program. One research group received PBI materials, guides for implementing performance based instruction, and intensive in-service training. The second group received the research based PBI materials and guides for implementing performance based instruction, but did not receive the intensive in-service training. The third group received only the research based PBI materials and were given the option to use or not use these materials. Each group conducted vocational education short courses for adults. The achievements and attitudes of the adult learners were analyzed and the attitudes of the instructors were analyzed.

ACCOMPLISHMENT

A cadre of 26 vocational instructors received training and experience in competency based instruction. Four hundred adults received vocational training; 300 of these received training through performance based instruction. Guides and forms were developed to assist instructors in implementing performance based instruction. Analysis of the results showed no significant differences in the achievements of adult learners among the three groups. Both instructors and adult learners indicated a strong attraction to the concepts of performance based instruction.

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I. INTRODUCTION

A. Background Information

Vocational education in Alabama through the years has served out-of-school youth and adults. However, the degree of service varied according to funding availability from the state level, the number of vocational education personnel willing to get involved with adult continuing education and other variables, such as priorities for secondary instructional programs. The overall organized approach and effort brought about the conditions that only in a few isolated areas of the state were adult vocational programs planned and implemented on a continuing basis. These were, in general, to be found in the large populated county and city areas where a minimum of personnel, time and promotional effort would lead to minimum enrollment requirement. This resulted in the same courses being constantly conducted and few new course offerings being developed and conducted.

In 1973, the Alabama State Department of Education reorganized the responsibility for coordinating and administering vocational adult education and centralized it into one section under the heading of "Adult Education." This section was given the mission of developing a comprehensive adult vocational education program designed to accomplish the following objectives:

(1) To equip a person with the knowledge, skills, and attitudes necessary to secure a job; to advance in the job; and to adapt to new organizational requirements, new methods of production, marketing products and services; and to become a more self-satisfied person.

(2) To update/upgrade knowledges, skills, and attitudes in order to perform a job at a higher proficiency and to prepare for advancement and higher earnings.

Presently, vocational adult education is offered to adults in Alabama through state instructors, contract classes (preparatory and supplemental) and non-contracted classes. The state instructors teach in the following fields: Management and Organizational Development, Industrial Safety and O.S.H.A. Requirements, Waste Water Treatment Training Program, Firemanship Training, Law Enforcement Training, Water Treatment Training Program, and Job Training and Safety. The contract classes (preparatory and supplemental) are offered at the secondary and postsecondary levels in each of the service areas of Trade and Industrial Education, Distributive Education, Agribusiness Education, Business and Office Education, Health Occupations Education, and Home Economics Education.

Changing technology in Alabama and throughout the nation compels adults to continue to upgrade their skills or develop new ones to secure and hold employment. The change in Alabama from an agrarian to an industrial labor market has displaced many workers who are in need of retraining for new occupations.

Adults are struggling for educational opportunities which will afford them social and economic security. The demand for adult educational services are being thrust on every type of educational institution and agency.

During the school year 1976-77 the number of adults served in Alabama was 69,014. There were 837 contracted classes conducted for 14,825 adults in secondary institutions and 385 contracted classes held for 8,635 adults in postsecondary institutions.

B. Statement of Problem

While adult vocational education is now available on a wide geographical basis throughout the state, the State of Alabama has identified two major problem areas related to the adult vocational education program:

(1) Assessment: An adequate program is not available for assessing the competencies of individuals entering or desiring to enter an instructional program.

(2) Curriculum Content: Job relevant content is not being provided to the extent of actually training adults to perform on the job at performance competency levels.

A program was needed which will provide relevant, job oriented instructional content and provide for effective assessment of learner competencies. Such a program needed to be adaptive enough to function in any occupational area and flexible enough to serve the variety of individual adult learner needs.

C. Review of Related Research

Today, more than ever, adults need and want education. The U.S.O.E. report, Career Education: A Handbook for Implementation, indicates that adult enrollments total less than one percent of the adult population! Yet, research points out that when high quality programs are offered, adults will take advantage of them. In surveys conducted by Beacham (1969) and Davis (1972) an overwhelming majority of unemployed respondents indicated an interest in participating in some type of training program.

Some reasons why adults need and want adult vocational education, as listed by Bundy (1972), are as follows:

(1) People are graduating from high school without the benefit of vocational education and thus do not possess the skills necessary for successful employment.

(2) The high school dropout rate is increasing and these people have neither the academic nor the vocational skills necessary for employment.

(3) Increased numbers of unskilled women are entering or desiring to enter the labor force.

(4) Unemployment, further aggravated by a downward economy, has displaced workers who need skills to reenter the work force.

(5) Cybernation (automation and use of computers) has created a situation in which the competencies needed by all workers have changed and demand that workers acquire new skills.

Wirtz (1975), in citing a U.S.O.E. survey by Oaks, points out that the purposes given by adults for participation in adult education programs vary widely. "For many, it is to raise skill levels, for others it is to acquire new knowledge and perspective about self and society... yet for others it is to acquire the credentials necessary for retraining or advancing in their jobs . . ." When asked what their primary purpose was, 59 percent had occupationally related objectives, 23 percent were there for general information, 23 percent for personal development, and 6 percent for recreational purposes.

Adult vocational education must therefore be responsible to a variety of individuals with many different goals, backgrounds, and levels of competencies. Faced with a great diversity of expectations, adult education must meet the need of program participants on an individual basis. According to Weinhold (1972), "Adults need individual attention perhaps more than do younger students." Knowles (1970) goes further and says that the adult educator is concerned with androgy (the teaching of man) rather than pedagogy (the teaching of children). Knowles presents an androgical model which he says is a process model rather than the content model with which most traditional educators are familiar. The content model is concerned with (1) selecting knowledges and skills to be transmitted, (2) arranging the material in a logical order, (3) deciding upon a means for transmitting the information, and (4) developing of a plan for transmitting the information. The process model, on the other hand, is concerned with:

(1) developing a climate suitable for learning

(2) developing a planning medium
(3) identifying the needs of the learner
(4) selecting objectives
(5) developing a pattern of learning experiences
(6) selecting suitable methods and techniques
(7) evaluating the results

It would be impossible to pre-arrange or pre-determine learning activities for the adult, for each is a unique individual who comes on the scene with a variety of experiences and many different needs. To some who are used to the more traditional teaching techniques, the adult process model may seem less than systematic. The difference, however, is that the process begins after the learner arrives.

Gale (1964) supports the thesis that the adult educator must assess learner competencies and interest before prescribing activities. This enables the learning activities to be aimed at the goals of the learner and aids in providing direction for the learner as one moves toward those goals. Meaningfulness in learning becomes a function of the relationship between learning activities and goals of the learner.

Cochran (1970) has characterized the trend of education during the 1960's with the phrase "to make education relevant" in terms of content teaching, methods, and in relation to the technological society. Smith (1969) has emphasized the need for a more competency based rationale for decision making in deciding strategies and curriculum content. Hodginson (1967) observed that we have become so dependent upon a technological society that vocational education will become a life-long process. The individual today has the choice of continuing schooling throughout his lifetime, or suffering from the inability to make a living.

Various other authors have stressed the trend toward more relevant curriculum. Feldman (1966) has pointed out that poor vocational guidance, outdated training facilities, and outmoded technical content are major deficiencies in our present curriculum. Shelly (1968), in a paper presented to the 1968 National Convention of the Institute of Electrical and Electronic Engineers, emphasized the need for an education system that would provide the learner with variable career options as well as make curriculum content relevant to the world of work.

In addition to technological advances over the past decade, the demand for educational accountability has stimulated a trend toward competency based education. Harland (1973) points out that the taxpaying population is no longer willing to trust blindly in education. Lessinger (1973) explains the concept of accountability as a public policy containing three basic rights:

(1) Every individual has a right to be taught what he needs to know to take a productive and rewarding part in society.

(2) The taxpayer and his elected representatives have a right to know what educational results are produced by a given expenditure.

(3) The schools have a right to draw on talent, enterprise, and technology from all sections of society.

The interest in accountability and relevant curriculum content has extended into the 70's and has stimulated much effort and research into innovative ways of vocational education. Perhaps one of the most noteworthy innovations has been that of applying the scientific method for developing relevant curricula based on task analyses of what people are actually doing on the job.

Dr. Howard M. Fortney (1975) recently completed a scholarly state of the art paper on competency based curriculum in Alabama. His work points out the growing acceptance of competency based education as a possible alternative offering several advantages over the traditional methods of vocational instruction.

The idea of basing curricula development on occupational analysis has been advocated by many students of curricula development including Tyler (1949), Mager (1962), Popham (1970), and Christol (1973). The literature reveals several development systems designed to implement competency based instructional programs. One such system is the Instructional System Design Model developed by the U.S. Air Force in the early 1960's. This model has been demonstrated to be an effective delivery system for developing occupationally related competency based instruction. This model incorporated many of the concepts of process curriculum development presented earlier in this review.

Several major efforts to create competency learning packages suitable for vocational instruction have been undertaken. Home Economics Learning Packets (HELPS) were constructed by individual home economics teachers for use in the area of home economics. Another major effort was the Learning Activity Packets (LAPS) developed by the Inter-State Distributive Education Curriculum Consortium.

In the summer of 1972, an Educational Consortium of Southern States for Accountability was formed under the auspices of Southern Association of Colleges and Schools for the sole purpose of developing catalogs of performance objectives for many occupational areas. The Commission on Occupational Education Institutes of the Southern Association of Colleges and Schools was designated administrative agency for the consortium. The name given to this consortium was V-TECS (Vocational-Technical Education Consortium of States).

The purpose of V-TECS was to develop catalogs of performance based objectives, plus criterion reference measures and performance guides for

these objectives. The lateral goals of these catalogs were to:

(1) Promote performance based instruction by providing instructors in vocational education with a firm foundation of valid curriculum content based on data-based research.

(2) Reduce duplication of effort across the member states.

(3) Share research and development costs.

(4) Improve content validity of vocational-technical programs.

(5) Improve overall accountability in vocational education.

A centralized V-TECS staff of experts officed in Atlanta acts as monitors of the effort and provides liaison between the member states.

Present state members of V-TECS include Alabama, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Mississippi, New York, Pennsylvania, South Carolina, Tennessee, Virginia, West Virginia, and Wisconsin, with Air Training Command of the U.S. Air Force and U.S. Naval Education and Training Command as Associate Members.

Approximately 40 performance based catalogs, each in separate occupational areas, have been developed by the states within the V-TECS Consortium. Additionally, 46 catalogs for other occupational areas have been assigned to member states for development.

The move toward competency based instruction fits well with adult education philosophy and principles which have evolved over the years. Hertling (1974) contends that competency based instruction is particularly suited to adult education programs because adults often possess practical experience which may enable them to demonstrate sufficient specific competencies without taking formal classwork. Miller (1973), in discussing the advantages of competency based instruction, included the following:

> . . . To the student, performance based instruction clearly communicates what he is to do and the standard of achievement expected. It enables him to evaluate his needs and progress and to assume responsibility for achievement . . . It is motivational in that it communicates to the student what is to be performed and gives him instant feedback for correction of errors . . . Performance based curriculum enables the instructor to identify teaching strategies of varying abilities, interests, and needs . . . Both student progress and program effectiveness become

> readily measurable . . . Among the benefits to the school is improved decision making at all levels . . . Employers, especially, benefit from the improved communications. Knowing exactly what skills students have acquired and the level of proficiency at which they can be expected to operate, the employer is in a better position to select and place employees from the school . . .

Although current trends, common sense, and logic all seem to support competency based instructional systems for adult education, research in this area appears to be scarce. A review of AIM/ARM (Abstracts of Instructional and Research Materials in Vocational and Technical Education) material and an ERIC (Educational Resources Information Center) search yielded few reports of hard research findings concerning competency based instruction. The majority of studies located were concentrated in the area of competency based teacher education. No studies were located which dealt directly with competency based adult education.

According to Hall and Jones (1976), in the book Competency Based Education: A Process for the Improvement of Education, "The number of research questions within the program development process alone is nearly infinite, while, sad to say, the many research questions on the program adoption side are equally pressing and there is even less known." Thus, it appears that sound research must be forthcoming if the development of competency based adult vocational education is to rest on a solid foundation.

D. Purpose and Objectives

All indicators show that competency based education is worthwhile, especially when combined with an instructional systems design approach; however, sufficient emperical evidence is not available for facilitating the development and improvement of competency based adult vocational programs. Therefore, the purposes of the Performance-based Adult Vocational Education (PAVE) project were:

(1) To develop an adult vocational education competency based program using a research based instructional systems design.

(2) To assess the application of competency based research products being developed by the Vocational-Technical Education Consortium of States in the development of adult vocational education programs.

The objectives of the project were:

(1) Design a model for implementing competency based adult vocational education.

The model was to include:

(a) administrative procedures for implementing competency based programs
(b) procedures for assessing learner competencies
(c) procedures for identifying learner needs
(d) procedures for prescribing learner activities
(e) procedures for assessing competencies acquired
(f) procedures for certifying student competencies

(2) Develop a plan for training adult vocational instructors in developing and using competency based instruction.

The plan was to include:

(a) criteria for identifying candidates for training
(b) performance standards and criterion levels for each segment of instructional systems development
(c) trainee reference materials

(3) Train ten adult vocational instructors to criterion levels of performance in competency based instruction.

Each instructor was to:

(a) demonstrate proficiency at established criterion levels for each segment of the instructional system
(b) be experienced in competency based adult vocational education
(c) be experienced in the development of competency related teaching materials from catalogs of performance objectives

(4) Implement competency based instruction in 40 adult vocational classes.

The instructional program of each class was to:

(a) be occupationally related
(b) have a minimum enrollment of 10 adults
(c) be designed from catalogs of performance objectives developed from occupational analysis research
(d) assess the learner competencies of each student
(e) identify the learner needs of each student
(f) prescribe learner activities for each student
(g) assess the competencies acquired by each student

(5) Complete an evaluation study of the effects of using competency based instruction in adult vocational education.

The evaluation report was to present the results of an experimental study which:

(a) tested three delivery systems
(b) provided for replication
(c) measured student performance and teacher attitude

II. METHODOLOGY

A. Project Design

The design for the PAVE project was of an experimental type design involving two experimental groups and a control group. Throughout this report the three groups are referred to as E_1, E_2, and E_3, with E_3 being the control group. Each of these groups are described below as to the types of activities carried out with each group.

Instructors assigned to E_1 group received all materials developed by the PAVE staff. Additionally, during the second quarter of the project, instructors in E_1 received intensive in-service training and consultative services in the development of teaching materials based on tasks selected from the V-TECS catalogs. The in-service involved an intensive two-day workshop and individual visits with instructors assigned to E_1. Each instructor in E_1 received up to $210 ($7.00 per hour) for the development of instructional materials. An additional $50 was made available to the E_1 instructors for the purchase of materials. Up to $70 per teacher was alloted to pay the instructor for collecting student assessment data.

Instructors assigned to E_2 group received all materials developed by the PAVE staff but did not participate in the intensive in-service training. Only minimum consultant services were provided to E_2 instructors in developing teaching materials. Instructors in E_2 were provided $210 ($7.00 per hour) for the development of instructional materials. An additional $50 was made available to the E_2 instructors for the purchase of materials. Up to $70 was also alloted to pay the instructor for collecting student assessment data. The primary difference between E_1 and E_2 was the amount of in-service training provided to the instructors and the amount of consultative services used. The following list materials were mailed to E_2 instructors (these materials are described later in this report):

(1) catalog of performance objectives
(2) list of tasks to be taught for PAVE project
(3) PAVE Guide to be followed in planning and conducting the course
(4) PAVE Forms 1 through 6
(5) materials on performance-based instruction and information concerning adult learners (as shown in Appendix D, pages 79-114)

Instructors assigned to E_3 group were used in the project as the control group. The instructors received a copy of the V-TECS catalogs related to their vocational area and a listing of the tasks to be taught by instructors in the project. Teaching materials were to be

developed using the V-TECS catalogs or any other materials they desired. The following materials were mailed to E_3 instructors:

(1) catalog of performance objectives
(2) list of tasks to be taught for PAVE project
(3) PAVE Forms 1 through 6
(4) materials on performance-based instruction and information concerning adult learners (as shown in Appendix D, pages 79-114)

The study consisted of two phases. Phase I was conducted during the first twelve months of the project and Phase II during the last six months. The instructor groups remained intact the maximum amount possible. The first six months of Phase I included the selection of PAVE staff and the organization and training of instructors. The second six months of Phase I involved the instructional aspects in the program. Learner competencies were assessed upon program entry and program exit.

Phase II was conducted during the last six months of the project. Each group conducted classes under circumstances similar to Phase I except no instructors received stipends for development of instructional materials. The Phase II replication allowed E_1 and E_2 instructors to utilize previously developed competency based instructional systems while eliminating effects of extra pay for developing materials.

B. Selection of Instructors

The limited availability of V-TECS catalogs and other limiting factors made it necessary to follow a five-step process before instructors could be assigned to the experimental groups. These steps are outlined in this section.

1. Select Vocational Service Area. The first step in the process was to select the appropriate service areas to include in the study. Trade and Industrial Education and Business and Office Education were the two vocational service areas selected for inclusion in the PAVE project. The following reasons are given to justify that selection:

   (a) V-TECS catalogs were available in these areas.
   (b) These service areas include courses that could be taught in adult programs held in area vocational centers and technical colleges.
   (c) These service areas have courses which do not contain certification standards or licensing.
   (d) These service areas have courses which are in sufficient demand to assure their being taught in both Phase I and Phase II.

2. Select V-TECS Catalogs. Catalogs developed through V-TECS are not available in all courses in either of the vocational

services selected. Also catalogs vary somewhat in quality. Five teaching areas were chosen from the two service areas and are as follows: Welding, Auto Body Repair, Auto Mechanics, Radio and TV, and Business and Office Procedures. The criteria listed below were used for selection of catalogs:

(a) Catalogs should be well-written, efficient, and available.
(b) Catalogs should be from on-going courses in order to assure a course in Phase I and Phase II.
(c) Catalogs should be from occupational areas where the courses are in demand.
(d) Catalogs should be applicable to both sexes.
(e) Catalogs should be usable for teaching in AVC's and technical colleges.

3. Select Tasks from the Catalogs Chosen. Catalogs in all of the areas chosen contained many more tasks than could be learned within the length of the course. The selection of the tasks involved two steps. Step 1 involved selection of tasks by instructors, incumbent workers, and members of the Craft Committees related to the particular course which the catalog was designed. The Craft Committee members used in selecting the tasks lived in close proximity to Montgomery. After the instructors were chosen and assigned to experimental groups, the tasks selected by Craft Committee members were given to instructors assigned to Experimental Group 1 to review. They were asked to accept, add additional tasks, or delete unnecessary tasks from the list. Criteria used in selecting tasks were:

(a) Tasks that were suitable for beginning adult learners.
(b) Enough tasks were selected that could be taught within a 72-hour course.
(c) In Business and Office Procedures, tasks related to typing and shorthand were excluded because they were too lengthy to be covered in a 72-hour course.

4. Select Schools to Participate. Letters were mailed to presidents of technical and community colleges and superintendents of local education agencies which had courses in the five areas selected. Contacts were made with the Director of Adult Programs and Program Specialists within the Postsecondary and Continuing Education Division of the State Department of Education for their recommendations as to schools with successful adult programs. The criteria used for selection of schools were:

(a) Must offer noncredit adult education short courses.

(b) Must have permission of the administrator to conduct course on school campus.
(c) Must have volunteer instructor who is willing to instruct learner in occupation course that was selected.
(d) Administrator must be agreeable for instructor to serve in any of the three experimental groups.
(e) Program(s) should already be established.
(f) Administrator and instructor must be agreeable to two phases, Phase I in the spring and Phase II in the fall.

5. Select Instructors to Participate. Superintendents of LEA's and presidents of technical and community colleges provided the names of 39 instructors who had volunteered to participate in the project. The criteria listed below was used to the extent possible in selecting teachers to participate:

(a) Experienced teacher, whenever possible.
(b) Familiar with performance-based instruction.
(c) Voluntary selection.
(d) Agree to participate in both phases of the project.
(e) Agree to participate in any group they're assigned.
(f) Agree to follow the design of the project.
(g) Agree to instruct all adult learners without regard to race or sex.

6. Assign Instructors to Experimental Groups. Instructors were randomly assigned by schools to the experimental groups. The randomization was limited to schools due to the extraneous variables which might enter in if teachers from different experimental groups were located at the same school. The interaction of these teachers could contaminate results when groups were compared.

C. Third Party Evaluation

A third party evaluator was engaged to assist in the design of learner assessment instruments, analyze data from the experimental research study, and prepare an evaluation of the project implementation. Specific responsibilities of the third party evaluator were:

(1) Provide technical assistance and/or consultation related to the development and administration of data collection instruments.

(a) Pre- and post-test instruments for measuring student progress in a competency-based instructional program.
(b) Opinionaires for teachers and students.

(2) Meet with PAVE project staff once each quarter throughout the project period.

(3) Make at least six field visits to participating instructors during the project period.

(4) Submit a report of the review of the products and processes of the pre-instructional phase.

(5) Submit an annual report after the first instructional component is completed.

(6) Submit a final Third Party Evaluator's report to PAVE project staff.

The selection of Third Party Evaluator was made on a competitive basis. Dr. Harry Frank, Vocational and Adult Education Department, Auburn University, Auburn, Alabama was selected as the Third Party Evaluator. Dr. Frank's final report is included as Appendix A.

III. ACTIVITIES AND ANALYSIS

A. In-Service for Teachers

The project design called for E_1 teachers to receive intensive in-service training and consultative services in the development of teaching materials based on tasks selected from the V-TECS catalogs. The first activity of the in-service process was an intensive two-day workshop conducted in December 1976. In order to plan for the workshop and orient the teachers as to what was to be expected in the workshop, two groups of materials were mailed to E_1 teachers. Included in the first group of materials was a questionnaire designed to give an indication as to whether the teachers were oriented toward andragogy or pedagogy and another to assess the teachers' knowledge of the performance-based instructional approach, the V-TECS system, and identify some problems they encounter in teaching adults. The Educational Orientation Questionnaire used in the survey was developed and copyrighted by Herschel N. Hadley. Permission was granted to include the instrument as a part of this report. The score sheet accompanying the instrument is used to assess whether the individual is oriented toward andragogy or pedagogy. Copies of these instruments are included as Appendix B. The analysis of the data collected with these instruments was used as input to determine the content for the two-day workshop. The second mailing included the agenda for the conference (see Appendix C) and materials on performance-based instruction and information concerning adult learners (see Appendix C).

The second activity conducted in preparation for the workshop was to develop a guide to implement the PAVE system and design appropriate forms to carry out the activities called for in the PAVE Guide. The PAVE Guide as shown in Appendix D includes:

(1) Introduction to the PAVE system

(2) Management of the PAVE system

(3) Purposes of the PAVE project and objectives of the PAVE Guide

(4) Notice to adult learners

(5) Organization of the PAVE system

(6) Activities chart for progression through the PAVE system

Six forms were designed to carry out the function of the PAVE Guide. These forms are included in Appendix D. Form 1 is designed to gather bibliographical information about the adult learners. This form may need to be revised for future use so as to identify those persons

included in the special adult populations receiving priority under P.L. 94-482 (i.e. displaced homemakers, single heads of households). Data collected using Form 1 is included as Appendix E, Tables 1 through 8 A brief summary of the data is described in Section IIIB of this report. Form 2 is a list of tasks, performance objectives and criterion-referenced measures for the particular course. The sample included in Appendix D is for Auto Body Repairman. Form 3 is a master sheet designed to record entry performance demonstrations and the progress of a student in the course. Form 4 is designed to record a student's accomplishments at each class meeting. Form 5 provides a format for teachers to use in planning the instructional process to be used in the class. Form 6 was designed to provide the PAVE staff with information relative to the instructors participating in the project.

The workshop was conducted December 9 and 10, 1976 at the Holiday Inn, Civic Center in Birmingham, Alabama. Thirteen instructors from the E_1 group, ten members of the State Department of Education, and the Third Party Evaluator were in attendance at the workshop. Instructors received instruction on the concept and characteristics of performance-based instruction. The content of this portion of the workshop centered around the role of the instructor and learner. Materials mailed to the instructors prior to the workshop (see Appendix C) were used as the basis for this discussion. Instruction on characteristics of adult learners, instructional strategies, and common problems encountered in teaching adults was conducted using the results from the Educational Orientation Questionnaire as the basis for the discussion. Additionally, the instructors received detailed information regarding the management procedures to be used in the PAVE project for assessing and recording student progress and the reporting process.

B. Descriptive Data on Adult Learners

Form 1 was developed as a part of the PAVE project to indicate descriptive or bibliographical information about the adult learner population which participated in the project. The form asks for such information as age, sex, race, employment status, how many adult courses they had taken, their reasons for enrolling, and how they found out about the course. The information collected through these forms should be helpful to the adult educators in the state in analyzing who the adult students are and what their needs might be. The data is included as Appendix F and an attempt is made in this section to highlight a few points from the data contained in those tables.

Over 50% of the adult learners in the project were less than 30 years of age. Approximately 80% were male with most males enrolled in traditionally male courses and females in traditionally female occupations. Efforts were made to recruit without regard to sex but met with small success in terms of numbers of persons crossing over for training in nontraditional areas. Auto mechanics and business and office in Phase II did show significant increases in males and females in non-traditional roles. Over 75% of the participants were employed but

approximately 70% of those who were employed were employed in occupations which they considered unrelated to the course in which they were enrolled. Approximately 63% of the PAVE participants had not taken any adult courses prior to the one in which they were enrolled. Approximately 40% enrolled in the courses to prepare for employment and another 30% to upgrade their skills.

The way the PAVE participants found out about the courses should be of particular importance to those recruiting adults for programs. Newspapers and through individuals were the ways most of the persons found out about the courses.

C. Evaluation of Hypotheses

Data collected from each of the three groups in each of the two phases were analyzed to test the hypotheses listed in this section. Results of this analysis are discussed in relation to each hypotheses.

H1. Adult learners taught in competency based vocational programs by instructors who receive specialized in-service training (Group E_1 instructors) in program development and the use of competency based catalogs of instruction will acquire more skills than adult learners taught in competency based vocational programs by instructors who do not receive specialized in-service training in program development and in the use of competency based catalogs.

The PAVE Guide instructed teachers to record the learner's performance on Form 4 and Form 3 (Master Sheet). If a learner could perform the skill upon entering the class an EPD (entry performance demonstration) was entered on the Form 3. When a student successfully performed a skill after instruction in the area a CRM (criterion referenced measure) was entered on the Form 3. For the purpose of analysis the number of EPD's and CRM's were combined. This was necessary due to apparent confusion as to proper recording of performance among E_2 and E_3 teachers. An analysis of variance was computed for each subject area and for the group as a whole. Caution should be used in drawing any conclusions from the overall group analysis since the number of tasks to be taught in each subject was different. Table I indicates the F values computed for each subject area. Significant (.01) F values were indicated in all groups except business and office. The Scheffe test was used to determine the location of significant differences. In each instance where significant differences existed E_2 learners completed significantly more tasks. Based on this evidence Hypothesis 1 was rejected.

H2. Adult learners taught in competency based vocational programs will acquire more competencies than those taught in a conventional program.

TABLE I

F RATIO OF ANALYSIS OF VARIANCE COMPUTED
ON NUMBER OF TASKS COMPLETED BY GROUPS

Course	Group 1		Group 2		Group 3		F Ratio
	Mean	SD	Mean	SD	Mean	SD	
Auto Body	7.04	11.86	13.88	1.43	6.09	3.44	9.00*
Auto Mechanics	13.35	5.34	20.64	5.39	10.27	4.89	27.62*
Radio & TV	41.14	18.56	58.50	5.12	18.24	14.35	20.25*
Business & Office	14.67	15.21	15.06	8.92	20.00	7.88	6.33
Welding	9.43	3.35	15.64	5.09	15.54	7.14	24.64*

NOTES: SD - Denotes Standard Deviation
* significant at .01 level

The analysis of variance discussed under Hypothesis 1 and the Scheffe tests computed did not reveal any significant differences of this nature except in Radio and TV. In other instances E_2 learners completed significantly more tasks than either E_1 or E_3 learners. Based on this analysis Hypothesis 2 was rejected.

3. Adult vocational instructors who use a competency based instructional system will demonstrate a more positive attitude toward the instructional program than those who teach in a conventional instructional system.

Table II reflects the responses of instructors relative to various questions proposed to them concerning Phase I instructional activities. A more in-depth evaluation of attitudes was scheduled as a part of the Summary Workshop at the end of Phase II but the workshop had to be cancelled due to inclement weather and could not be rescheduled prior to the close of the project.

When asked if they would prefer the approach used in this project over methods they had been using in the past, E_1 instructors were most positive, E_2 most negative, and E_3 most undecided. The same type of response was given when asked about willingness to participate in another project of this nature.

TABLE II

PERCENTAGE OF INSTRUCTORS' RESPONSES REGARDING PHASE I INSTRUCTIONAL ACTIVITIES BY GROUP

Question	Group 1 (n=9)			Group 2 (n=11)			Group 3 (n=7)			Total (n=27)		
	% Responding			% Responding			% Responding			% Responding		
	Yes	No	?	Yes	No	?	Yes	No	?	Yes	No	?
Do you prefer the type of instruction you used in this project over the traditional types of instruction?	67	0	33	45	36	18	29	14	57	48	19	33
Did you receive adequate assistance from the project staff while participating in the project?	89	0	11	91	9	0	100	0	0	93	4	4
Would you be willing to participate in another project such as this?	100	0	0	55	0	45	86	0	14	78	0	22
Did your adult learners accept the teaching methods used in this course?	67	0	33	91	0	9	100	0	0	85	0	15
Were the tasks selected for this course meaningful to the adult learners who enrolled?	78	11	11	73	9	18	71	14	14	81	11	8
Were the criterion tests used to evaluate adult learners' progress appropriate for the adult learners who enrolled in the course?	100	0	0	91	9	0	57	0	43	85	4	11
Were the materials provided by the project staff helpful to you in organizing the course?	100	0	0	100	0	0	57	14	29	89	4	7
Do you advocate disseminating the V-TECS catalogs throughout the state in all appropriate vocational education classes?	56	33	11	82	0	18	14	29	57	56	19	26
Do you prefer using the V-TECS catalogs rather than the traditional course materials you have been using?	44	11	44	55	27	18	14	43	43	41	26	33
Do you think the V-TECS catalogs can be used widely throughout the state without any interpretation or in-service education by the State Department of Education staff?	22	67	11	45	45	9	43	29	29	37	48	15

In addition to the items reflected in Table II several open-ended questions were asked in an effort to provide further insight into the instructors' evaluation of the process. Questions such as "What is your opinion of the number of forms required . . .?," "How extensively did you use the V-TECS catalog?" and questions related to likes, dislikes, and suggested changes were asked in an effort to discover ways for improving the process used in the PAVE project. In addition to these questions the instructors were asked to list strong and weak points of the PAVE Guide. Some of the comments made by the instructors related to performance-based instruction, some to the PAVE process, while others were oriented toward V-TECS catalogs.

Six of the nine instructors in Group 1 indicated too many forms were required but the majority of instructors in Group 2 and 3 indicated the number was sufficient. The majority of instructors in Group 1 and 2 made considerable use of the V-TECS catalogs whereas the majority of Group 3 made little or no use of the catalogs.

Several teachers had favorable comments regarding the effective organization of instruction brought about through the process used in the project. Some teachers, however, felt that the process was similar to the process already available to trade and industrial education teachers. This might be a part of the explanation as to why the lack of difference between E_3 group teachers and teachers in E_1 and E_2. Comments such as "student progresses at own rate" and "process is helpful in identifying what student already knows" were prevalent among instructors. Some teachers felt that once the system was developed it would become an effective guide for the teacher.

The majority of the "dislikes" centered around tasks. Some said tasks were too basic, others that tasks were too large in content. One comment by an instructor was that rather than selecting tasks for adult learners, let each adult select the tasks from V-TECS that he needs in order to reach his selected goals.

The majority of teachers in E_1 group felt that the in-service activities were one of the strong points in the program. The pre-test and Instructional Planning Sheet were two of the strong points mentioned regarding the PAVE Guide. Being able to provide the student the objective/tasks each will be expected to reach in advance should contribute to the motivation of the student according to one instructor.

4. Adult learners who were taught in a competency based instructional system will demonstrate a more positive attitude than adult learners taught in a conventional system.

Table III reflects the responses of adult learners as to their opinion regarding instructional activities of the PAVE project. No significant differences existed among E_1, E_2, and E_3 learners as to their attitude toward the instructional process. Adult learners were very positive in their attitude toward the instruction they received. An average of 94% indicated they the courses met their expectations.

TABLE III

PERCENTAGE OF ADULT LEARNERS' RESPONSES AS TO OPINION REGARDING INSTRUCTIONAL ACTIVITIES BY PHASE AND GROUP

Question	Phase I									Phase II									Total (n=381)		
	Group 1 (n=70)			Group 2 (n=88)			Group 3 (n=66)			Group 1 (n=58)			Group 2 (n=40)			Group 3 (N=59)					
	% Responding			% Responding			% Responding			% Responding			% Responding			% Responding			Yes	No	?
	Yes	No	?	Yes	No	?	Yes	No	?	Yes	No	?	Yes	No	?	Yes	No	?			
Did you understand the goals of this course throughout the entire course?	93.0	0	7.0	94.3	4.6	1.1	95.5	0	4.5	94.8	0	5.2	92.5	2.5	5.0	94.9	1.7	3.4	94.2	1.6	4.2
Were you aware throughout the course of the skills and knowledges that you were expected to learn?	97.0	1.5	1.5	93.2	3.4	3.4	95.5	1.5	3.0	94.8	0	5.2	85.0	2.5	12.5	96.6	1.7	1.7	94.2	1.8	4.0
Do you think that the knowledges and skills learned in this course will help you on a job?	99.0	1.5	0	96.6	0	3.4	97.0	0	3.0	89.7	5.2	5.1	97.5	0	2.5	91.5	6.8	1.7	95.3	2.1	2.6
Did you understand at all times what you were expected to do in the course and what you were expected to do next?	90.0	7.0	3.0	85.2	5.7	9.1	92.4	30.0	4.6	91.4	3.4	5.2	90.0	2.5	7.5	91.5	3.4	5.1	89.8	4.5	5.7
Did you understand how your progress and achievements in this course would be evaluated by your instructor?	83.0	7.0	10.0	85.2	8.0	6.8	75.8	15.2	9.0	87.9	5.2	6.9	72.5	20.0	7.5	84.7	8.5	6.8	82.2	10.0	7.8
Would you take a course taught in this manner again?	90.0	1.0	9.0	86.4	2.3	11.4	94.0	0	6.0	93.1	1.7	5.2	92.5	2.5	5.0	94.9	0	5.1	91.3	1.3	7.4
Have you taken any kind of adult evening courses prior to this one?	50.0	50.0	0	34.1	65.9	2.3	25.8	74.2	0	55.2	44.8	0	35.0	65.0	0	18.6	81.4	0	36.5	63.5	0
Did this course meet your expectations?	95.7	1.5	2.9	92.0	2.3	5.7	94.0	3.0	3.0	94.8	1.7	3.5	90.0	2.5	7.5	96.6	1.7	1.7	94.0	2.1	3.9

IV. RESULTS AND END PRODUCTS

The experiences and results derived from this project and the end products generated are serving as the foundation from which competency-based instructional programs are being developed for Alabama's adult vocational education. End products associated with the project are being packaged to facilitate transportability to adult education programs within Alabama and within other states.

The results and end products generated in association with this project are described under five categories. These categories are: cadre of trained teachers, adults trained in competency-based programs, descriptive model of instructional systems, plan for training vocational instructors, and evaluation report.

A. Cadre of Trained Vocational Instructors

A total of 39 vocational instructors were involved in the project. Of these, 26 received varying degrees of training related to competency-based instruction. A cadre of 10 of these trained instructors have been identified to serve as success models and resource persons in the further implementation of competency-based adult vocational education programs.

B. Adults Trained in Competency-Based Instructional Programs

A total of 400 adults received vocational training in association with the project. Of these, 300 were trained in instructional programs which were designed to provide competency-based instruction.

C. Descriptive Model of the Instructional System

The Alabama State Department of Education, Division of Vocational Education, has made an extensive commitment to the development and implementation of competency-based vocational instruction. The Performance-based Adult Vocational Education project was integrated into the competency-based instructional efforts of the Division of Vocational Education. The PAVE project field tested various materials and procedures being developed by the Division of Vocational Education. The results of the PAVE field testing were used to further develop materials and procedures being developed for performance-based instruction. Appendix F is an excerpt from the publication, Introduction to Performance-Based Instruction in Vocational Education. This publication introduces the instructional system model that was utilized in the PAVE project. This final model was designed to be used for implementing performance-based instruction in any vocational content area and for any level of instruction. This model was field tested and refined through the PAVE project. This publication is available through Resources in Education (RIE) or from the Alabama State Department of Education, Division of Vocational Education.

Excerpts from a second publication, Developing Performance Objectives and Criterion-Referenced Measures for Vocational Education, is included as Appendix G. This publication breaks down the instructional system model into detailed components explaining the rationale, purpose, and function of each segment of the model. This publication was field tested and refined in the PAVE project. This publication is available through Resources in Education (RIE) or from the Alabama State Department of Education, Division of Vocational Education.

Excerpts from a third publication, Instructional Planning, is included as Appendix H. As the table of contents indicates, this publication is to be utilized by the instructor for the actual development of teaching learning materials and lesson planning. The components of this publication were also field tested and refined through the PAVE project. This publication is in press and will be available through Resources in Education (RIE) or from the Alabama State Department of Education, Division of Vocational Education.

A fourth appendix is the PAVE Guide, Appendix D, which was developed for and utilized by the instructors in the PAVE project for implementing the concepts derived from the previous three publications. The PAVE Guide provided for direct application of performance-based instructional concepts into the development of short-term vocational education courses for adults.

D. Plan for Training Adult Vocational Instructors

A plan was developed for the purpose of training vocational teachers to develop and implement performance-based instruction. The plan was utilized in the PAVE project for training vocational instructors to develop and implement performance-based instruction in short-term courses for adults. This plan is included in Appendices C and D. The plan was designed to be implemented in the format of a workshop. Part I of the training plan was presented to the total group of workshop participants in large group meetings. Part II of the workshop was implemented with small groups of vocational teachers organized by instructional subject area. In Part II of the plan, the participants developed competencies in the design and development of performance-based instructional materials. A third part of the training plan includes self-assessment checklist for the participants to use in identifying appropriate starting points for the workshop.

E. An Evaluation Report

A statistical analysis and evaluation of the application of the competency-based instructional system in adult vocational education was conducted. This analysis and evaluation compared the three groups involved in each phase of the PAVE project. The evaluation also analyzes the two phases of implementation in the PAVE project. The evaluation is included in Section III C of this report. The evaluation report developed by the Third Party Evaluator is attached as Appendix A to this report.

V. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations contained in this section were derived from the data analysis, observations and experiences of the project staff, and reports of the Third Party Evaluator. The conclusions are founded more on professional judgement than on statistical inference. The recommendations are directed to persons who may be planning adult education programs or competency based instruction, but more specifically to persons planning competency based instruction for adults.

A. Conclusions

The heterogeneity of adult learners is a major characteristic of adult programs. Adult learners not only have varying degrees of motivation and interest and different learning styles, but their basic reason for taking courses vary considerably. Approximately 40% of the adults enrolled in this program indicated they were enrolled to prepare for employment while another 30% reported that they were enrolled to upgrade their skills for their current employment. The many comments received from the adult learners indicated that some prefer considerable structure and direction in their programs while others prefer a less structured self-paced approach to learning. Many adult learners readily accepted the specific objectives and activities that have been outlined for the courses while many others insisted that they have some leeway in selecting the types of activities and learning experiences in which they are engaged. Since most adults enrolled were volunteer participants and were not members of a "captive audience" they have the leverage to force much of their expectations upon the course content and procedures.

Adult learners were reluctant to adventure into unexplored areas or to break traditional occupational lines. Even though efforts were made to recruit across sex lines and attract females into traditionally male programs and attract males into traditionally female programs, the adults resisted crossing the traditional lines and in enrolling in non-traditional courses. Extensive efforts to recruit across sex lines were made by the instructors in the project. Some women attended the initial classes in some of the traditionally male occupational areas, specifically, welding classes; however, all of these women failed to enroll in the programs or continue their participation. During the second phase of the project, more success was made in attracting adult learners into non-traditional occupational areas.

Many vocational instructors' traditional teaching methods are not far removed from identified competency based instructional methods. Many of the instructors in the project indicated much of the materials and procedures used in the project were similar to those that they have been traditionally using. These instructors identified as practices which they had been using such methodologies as pre-testing performance

checking, progress check sheets, and pre-establishing objectives, which were also included in the competency based instructional program in the project.

Instructors are very positive toward adult education in which the performance outcomes are used to measure student success. Instructors indicated that they liked the establishment of objectives prior to instruction and the performance orientation of the courses.

Adult learners like courses in which the objectives are identified prior to the instruction and the learning experiences are performance oriented. Adult learners also indicated that they liked the use of progress checks to provide feedback to the learner.

There is significant variation in the quality of available performance based instructional materials. Experience in this project indicated that there is significant variance in the quality of the V-TECS catalogs. During the task selection process in which experienced teachers were asked to draw from the catalogs occupational tasks to be included in the adult short courses, the teachers in some of the occupational areas challenged the validity of the task statements contained in the catalogs. There is extreme variation in the scope of occupational tasks contained in the catalogs. Instructors and incumbent workers reported that the tasks contained in some catalogs were too minute and discreet to facilitate efficient instruction or progress testing. In other occupational areas instructors and incumbent workers found that the task statements were too broad in scope to be contained in a single learning activity or performance measure.

Teachers who received in-service education relating to competency based programs consider the in-service activity to be a very strong part of the program and expressed their belief that a competency based instructional program could not be successfully initiated without being preceeded by significant in-service education.

Instructors found useful the materials and forms that assisted them in providing some structure and organization to the competency based instructional program. Both group 1 and group 2 instructors in the project indicated that they found the PAVE Guide very useful, especially the pre-test and instructional planning sheets. Instructors indicated a need for the V-TECS catalogs to be supplemented with suggested resources and/or curriculum materials which might be supplied by the State Department of Education curriculum specialist.

Instructors also indicated that the types of materials and activities included in the PAVE project would be useful in articulating related programs and planning sequential programs.

There was no difference in the level of performance of adult learners between groups, however, an analysis of the data reported indicated this may be due to two factors: (1) many of the instructors were

already using methods and materials that were very little different from the competency based instructional program utilized in the project; (2) there was apparent lack of clarity or understanding on the part of many of the instructors in the procedures for conducting and reporting the pre-test. An analysis of the attitudes of the instructors indicated that instructors who receive significant in-service training and assistance were more comfortable and more positive toward implementation of the competency based instructional program while the instructors who received competency based materials but no in-service assistance were much less positive toward the program and were more uncomfortable in implementing this system.

Based on the andragogical test, instructors appeared to have very little orientation toward andragogical concepts. Most instructors used teaching methods based on pedagogical concepts.

B. Recommendations

It is recommended that courses for adults be planned with enough flexibility to allow the adult learners some selectivity in course content.

It is recommended that courses for adults be planned to accommodate a variety of learning styles.

When it is desirable to attract adult learners of a particular gender into vocational courses not traditionally entered by that gender, it is recommended that in addition to extensive recruiting, follow-through efforts be emphasized to assure that the students actually enroll and continue to participate in the course.

It is recommended that a form of competency based instruction which identifies pre-established objectives and utilized performance outcomes to measure student progress be utilized in vocational education programs for adults.

It is recommended that course planners and teachers using competency based instruction carefully review and select from available competency based instructional materials to obtain those that are of consistent high quality.

It is recommended that appropriate in-service be provided to teachers in coordination with the dissemination of competency based curriculum and instructional materials.

It is recommended that teachers of adults be provided in-service training in the utilization of competency based instructional materials with special emphasis being given to assessing both student entry competencies and student progress.

It is recommended that teachers be trained to develop sub-objectives or enabling objectives for tasks that are too broad in scope for effective instruction.

It is recommended that teachers of adults in competency based instructional vocational programs be provided with course planning guides and forms for checking and recording student progress.

It is recommended that vocational teachers be trained in andragogical concepts and their implications for teaching adults before initiating courses for adults.

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APPENDICES

Appendix A

THIRD PARTY EVALUATION REPORT

Dr. Harry E. Frank, Third Party Evaluator

The third party evaluation report will indicate a perception of the project's achievement of stated objectives, procedural accomplishments, project instructors, measures of effectiveness, findings and recommendations and suggestions for future activities related to the project.

The evaluator has taken an active part in the project and visited many sites for review and consultation with project staff, project teachers and adult class learners.

The publication "Preparing Evaluation Reports, A Guide for Authors", U.S. Department of Health, Education and Welfare, U.S. Office of Education, was used as a guide for project evaluation.

The Project Director and Staff furnished the evaluator all data related to the project and cooperated with the evaluator throughout the duration of the project.

SCOPE OF THE PROGRAM

The validated procedures for training adult vocational instructors could be used to develop effective competency based instruction by vocational instructors who will teach Vocational Education to adults throughout the United States.

APPENDIX A

OBJECTIVES

The specific objectives related directly to this project were:

1. Design a model for implementing competency based adult vocational education.
2. Develop a plan for training adult vocational instructors in developing and using competency based instruction.
3. Train ten adult vocational instructors to criterion levels of performance in competency based instruction.
4. Implement competency based instruction in forty adult vocational classes.
5. Complete an evaluation study of the effects of using competency based instruction in adult vocational education.

The project objectives were successfully obtained with an unusually high level of success. The model for implementing competency based adult vocational education has been designed and successfully implemented throughout the project.

PROCEDURES

The administrative pattern that was developed did encourage local technical and vocational institutions to cooperate with the State Department of Education and the project staff in conducting the project. Adequate orientation to concepts, materials and objectives of the project provided a background for successful participation by the instructors, local learners, local and state administrators and project personnel.

APPENDIX A

The procedures for assessing learners beginning competence, identifying learner needs, prescribing learner activities, ascertaining competencies attained during the class and certifying learner competencies were developed, altered and field tested to develop their effectiveness.

A description of learner needs was developed on the basis of existing learner competencies. Pretest and post-test performance in relation to criterion levels needed for competence in the vocational field were used to assess the competencies acquired by each learner during the learning period.

Desired performance of recommended tasks, entry performance demonstrations and criterion reference measures were used for assessing learner competencies and identifying learner needs relating to relevant course objectives listed in the V-TECS catalogs.

Identified competencies needed and competency assessment supported a prescribed plan designed to develop competencies needed at a criterion level.

The Trade and Industrial Horticulture and Business and Office Vocational areas were selected because V-TECS catalogs were available in these areas and they were taught in area Vocational centers and Technical Colleges. They also do not contain certification standards and have a generally large demand for courses which helped to secure enrollments throughout the project.

PROJECT INSTRUCTORS

The instructors were volunteers who were experienced, familiar with performance based instruction and agreeable to group classification. They were favorable toward participation in both phases of the project and

agreed to follow the design and recommendations throughout the project.

Instructors who participated in training activities selected a basis for demonstrating proficiency at criterion levels for each segment of the instructional system. They accepted competency based teaching and gained experience in the development of competency based teaching materials related to the catalogs of performance objectives.

The instructors included in the project, were in general, very competent in teaching and knowledgeable in their fields. One had written books on Vocational Education that are nationally distributed and several had received recognition for their accomplishments in their vocational fields.

The Group I instructors had extensive V-TECS orientation and assistance by the project staff in developing instructional plans. They also had access to additional instructional materials.

The instructional programs were occupationally related with the content derived from the V-TECS catalogs which were developed with the help of practitioners and professional persons in various vocational areas through occupational research.

The Group II instructors received limited V-TECS orientation and instructional plan development.

Group III received the V-TECS catalogs but no planned learning experiences with lesson plans based upon V-TECS catalogs.

APPENDIX A

MEASURES TO DETERMINE EFFECTIVENESS

The project included several activities to determine success of the project. Besides the quasi-experimental nature of the project, several suggestions for improvement of learning activities were obtained through personal contact by project staff and the third party evaluator with the local instructors, learners and administrators.

Every effort was made to carry out the experimental aspects of the project and still have a practical situation so that in the future this approach can be applied to an extremely large population.

Some factors, such as a lack of adequate orientation to proper means of evaluating the progress of learners, may have affected the responses on progress made toward meeting the goals described by criterion measurements.

The improvement in task performance indicated by an analysis of competencies at the beginning and end of the classes was used as one major measure of performance.

Opinions as to the value of the instructional activities were obtained from the instructors on Phase I but were not obtained due to scheduling difficulties on Phase II.

The opinions of the adult learners were obtained relative to the instructional activities for both phases and by all groups. These opinions may be a strong basis for encouraging further emphasis on the teaching approach.

APPENDIX A

FINDINGS

The specific project objectives relative to the functioning of the project were accomplished throughout the project period.

Objective I

A model was designed for implementing competency based adult vocational education with three delivery systems all of which seemed to be relatively effective in meeting adult learner needs.

The high quality of instructors participating in the project might have been an important factor in such apparent teaching effectiveness.

Objective II

The comprehensive plan for training vocational instructors seemed to be effective in preparing the instructors in understanding competency based concepts, competencies in planning curriculum using V-TECS catalogs and assessing competencies acquired by adult learners. Different levels of training were developed to meet the needs of the experimental project.

Objective III

Extensive professional training in competency based instruction was provided for 10 adult vocational instructors (E_1 group, to criterion levels of performance). This provided the foundation to more confidence and appreciation for the competency based approach as additional experience was obtained. The instructors who were provided the most professional training were much more favorable toward using the V-TECS catalog and the competency based instruction for adults in vocational education than those less exposed to the approach, E_2's and E_3's.

APPENDIX A

Objective IV

Although 40 adult vocational classes were expected to participate in the project, 37 classes were involved in the Phase I and 25 classes in Phase II. Several classes did not meet the minimum enrollment requirements. Some instructors had other responsibilities that prevented them from participation in Phase II.

Numerous factors often influence the enrollments in the short-course adult vocational programs so this project is not unusual in having decreased participation.

Objective V

The analysis of data and findings included in the final report attest to the extensive study completed to evaluate the effects of using competency based instruction.

The study revealed that when there was a significant difference in completion of tasks the E_2 group learners completed significantly more tasks.

When conventional programs were compared with competency based programs there was no significant differences in the competencies acquired except in Radio and T.V. In this vocational area the competency based programs were more effective in developing needed competencies.

INSTRUCTORS AND LEARNER COMMENTS

The instructors who were more involved in the competency based instructional programs were more favorable in regard to using the new approach rather than what they had been using in the past. The E_2 group were the most negative and the E_3 group were more undecided.

These groups responded in the same manner of preference when asked about their willingness to participate in another project of this nature.

These findings seem to verify the assumption that adequate orientation and assistance is needed to support the acceptance of the V-TECS catalogs and competency based instruction that many instructors consider to be an effective approach toward meeting vocational needs of adults in developing knowledge and skill helpful to them on the job. This approach also seemed to be meeting the learners' expectations.

The instructors in the E_3 group, which only had access to the catalogs, were not nearly as favorable toward using V-TECS catalogs as those in Groups E_1 and E_2, where orientation and use were presented at different levels. The groups using the catalogs definitely opposed using the catalogs without interpretations or guidance in using them.

APPENDIX A

All instructors were favorable toward materials furnished by project staff. Only about two-thirds of the E_1 group felt their learners readily accepted the approach while E_2 group felt all their learners readily accepted their approach. The E_3 group felt one-third were undecided about the approach.

These opinions of instructors support the need for adequate training and follow-up on the competency based concepts and practices with adequate support from instructors to help implement competency based instruction.

Responses to the competency based educational program by learners who participated in the programs indicated that they approved the instructional systems design and that the application of the V-TECS research products are indeed applicable for the development of adult vocational education programs.

Most of the learners in all groups reported that they were knowledgeable about the course goals, the skills and knowledge they were expected to learn, what they were expected to do and to do next and how the progress would be evaluated by their instructor.

About one-third of the learners had taken an adult evening course before but over 90 percent indicated that this course did meet their expectations and they would take a course taught in this manner again. Over 95 percent of the learners also indicated that they felt that the knowledge and skills learned in the course would help them on the job.

APPENDIX A
RECOMMENDATIONS

1. That a greatly expanded number of competency based vocational education short courses be made available for adults.

2. That the V-TECS catalogs and similar practioner research based guides in competency based education provide a basis for the vocational programs for adults.

3. That cooperative efforts of the V-TECS group be directed toward adequate orientation to the use of the V-TECS catalogs and follow-up activities of the PAVE model for vocational instructors. Auburn University Center for Vocational and Adult Education be selected to coordinate and assist in carrying out this task in the 13 state V-TECS area.

4. Additional research be carried out to assist instructors developing competencies in the assessment of task completion and selection of most relevant tasks to be recommended for learners in short courses.

5. Additional support at the national and state and local level should be increased for adult vocational programs since the combination of excellent physical resources, well qualified instructors, practical and research based curriculum guides (V-TECS catalogs, etc.) and cooperative efforts by the SDE and PAVE project staff has demonstrated that the tax paying adults were well satisfied with the courses and felt they were more competent on the job as a result of taking the course.

6. That all vocational instructors be provided V-TECS or other competency based guides and that adequate follow-up be provided for implementation of this teaching approach.

7. Vocational supervisors be provided some assessment of using the competency based approach in order to provide guidance for the future.

ADULT LEARNER RESPONSES

Responses to the competency based educational program by learners who participated in the programs indicated that they approved the instructional systems design and that the application of the V-TECS research products are indeed applicable for the development of adult vocational education programs.

Learners in all groups were knowledgeable about the course goals, the skills and knowledge they were expected to learn, what they were expected to do and to do next and how the progress would be evaluated by their instructor.

About one-third of the learners had taken an adult evening course before but over 90% indicated that this course did meet their expectations and they would take a course taught in this manner again. Over 95% of the learners also indicated that they felt that the knowledge and skills learned in the course would help them on the job.

APPENDIX A

THIRD PARTY EVALUATOR FIELD VISITS
PHASE II

Field visits were made to nine classes with the following distribution:

E_1 Group - 3 classes - 2 Radio/TV - Auto Body

E_2 Group - 3 classes - BOE - Auto Body - Welding

E_3 Group - 3 classes - BOE - Auto Mechanics - Welding

State staff members were able to meet on the sites with the evaluator and local personnel. The visits were valuable in obtaining opinions of the local administrators and instructors. The materials and teaching resources available for instruction were observed and often the instructors were very proud of their accomplishments and facilities. The extent to which the instructors accepted the educational approach offered by the project was often demonstrated in the degree of use of the V-TECS catalogs in the "regular" day classes.

In general the instructors were proud of their participation in the projects and intent to use this procedure in the future. Short comments relating to favorable and unfavorable aspects observed and concerns of the local instructors and administrators are listed for each visit.

Major problem areas encountered by instructors visited included:

1. wide variation in learner competency
2. many learners want to work on specific tasks, not V-TECS competencies
3. limited time to become competent in large number of tasks

APPENDIX A

Some of the favorable aspects of the program as expressed during field visits were:

1. gives a sound educational approach and legitimacy to classes
2. the second time seemed much easier than the first
3. Administrators were favorable to the V-TECS approach
4. some teachers became more confident as they used the V-TECS educational approach

Some major concerns were:

1. obtaining enough learners with similar needs
2. convincing learners to recognize the value of testing for competencies
3. providing extensive training for instructors in using the V-TECS approach

APPENDIX A

GROUP AND CLASS	FAVORABLE ASPECTS	UNFAVORABLE ASPECTS	CONCERNS
E_2 BOE	Equipment and materials very supportive. School newsletter effective. Thought V-TECS good deal. Teaching adults considered rewarding	Telephone contacts hampered by lack of free lines. Testing encourages dropouts	Identifying large variation in learner needs without over-testing
E_3 Auto Mechanics	Supporting good rapport with students and administration. Good supplies and equipment Advertised through school paper and community paper Good record keeping	Revision of V-TECS catalog if needed to meet his student's needs	Securing adequate numbers with vocational goals for the classes
E_1 Radio/T.V.	Excellent lesson plans based on V-TECS guides	Wide variation in knowledge levels and competencies of students	Securing and maintaining enrollment within the instructor's time framework
E_1 Radio/T.V.	Working much better second time. Learners develop confidence and support the "learning at own speed" concept	Wide range of competence of learners; advanced and beginning in same class	Finding time to adjust to class needs
E_1 Auto Body	Very experienced instructor utilizes references and considers it easier the second time to use guides and V-TECS	A few students want to concentrate on a small number of competencies	Forms are considered time consuming
E_3 Welding	Enthusiastic teacher V-TECS provides basis for better organization of content	Difficult to ascertain level of competencies needed with some tasks	Sometimes difficult at first to orient learner to this educational approach
E_2 Auto Body	V-TECS catalog gives legitimacy to what he teaches	Many students want to work on specific jobs rather than develop competencies included in V-TECS	Motivation strategies helpful in convincing learners to use V-TECS competencies as valid
E_2 Welding	Experience with V-TECS and the structured program support a sound educational approach	Too much expected in terms of tasks to master for the limited time in the course	Tasks selected for course be limited Adequate training for instructors in V-TECS
E_3 BOE	Increased administrator support and teachers commitment	Did not have orientation to V-TECS in initial class has become more knowledgeable through experience	Promotional activities should aim at securing learners with somewhat similar competencies

APPENDIX B

Educational Orientation Questionnaire and Pretest

APPENDIX B

EDUCATIONAL ORIENTATION QUESTIONNAIRE

Below are statements about education, teaching, and learning. These have been chosen to express several different viewpoints.

Please Note: In completing this questionnaire keep in mind that the word "student" means adult student, and the word "teacher" means yourself - the person filling out the questionnaire. In other words, your answers indicate your educational orientation in working with adults.

For each statement, please put an "X" in one of the five boxes in front of that statement. Choose the box that indicates your attitude or position best - how much you agree or disagree with that statement. The five positions from which to choose are:

SA - I strongly agree with this statement.
A - I agree with this statement.
U - I'm uncertain about this statement to agree or disagree.
D - I disagree with this statement.
SD - I strongly disagree with this statement.

SA	A	U	D	SD		
( )	( )	( )	( )	( )	1.	Education should focus on what is sure, reliable, and lasting.
( )	( )	( )	( )	( )	2.	Teaching effectiveness should be measured by students' increase in examination of their own feelings, attitudes, and behaviors.
( )	( )	( )	( )	( )	3.	Students need a strong teacher who can direct their learning.
( )	( )	( )	( )	( )	4.	It's hard to keep people from learning.
( )	( )	( )	( )	( )	5.	Learning is an intellectual process of understanding ideas (concepts) and acquiring skills.

SA	A	U	D	SD		
( )	( )	( )	( )	( )	6.	Effective learning occurs most often when students actively participate in deciding what is to be learned and how.
( )	( )	( )	( )	( )	7.	Giving examinations regularly motivates students to learn.
( )	( )	( )	( )	( )	8.	Organization of the content and sequence of learning activities should grow out of students' needs, with their participation.
( )	( )	( )	( )	( )	9.	It should be the teacher's responsibility to evaluate students' achievements and assign grades.
( )	( )	( )	( )	( )	10.	The best sources of ideas for improving teaching and education are the students.

SA	A	U	D	SD		
( )	( )	( )	( )	( )	11.	Competition among students encourages keen learning.
( )	( )	( )	( )	( )	12.	A teacher by his behavior should show each student that his abilities and experiences are respected and valued.
( )	( )	( )	( )	( )	13.	A teacher should help students accept values of our society
( )	( )	( )	( )	( )	14.	To see education as transmittal of knowledge is obsolete.
( )	( )	( )	( )	( )	15.	Students tend to be much alike.
( )	( )	( )	( )	( )	16.	It is a teacher's responsibility to motivate students to learn what they ought to learn.

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APPENDIX B

SA A U D SD

( ) ( ) ( ) ( ) ( ) 17. Clear explanation by the teacher is essential for effective learning.

( ) ( ) ( ) ( ) ( ) 18. A teacher's primary responsibility is helping students choose and develop their own directions for learning.

( ) ( ) ( ) ( ) ( ) 19. A good teacher makes the decisions about what should be taught, when, and how.

( ) ( ) ( ) ( ) ( ) 20. A teacher seldom needs to know the average students as separate individuals.

( ) ( ) ( ) ( ) ( ) 21. A teacher should not change his expressed decisions without unusually good reasons.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 22. Emphasizing efficiency in teaching often blocks development of an effective learning climate.

( ) ( ) ( ) ( ) ( ) 23. An adult education program should be evaluated by the same standards as other accredited programs of education.

( ) ( ) ( ) ( ) ( ) 24. Evaluating his achievement should be primarily a responsibility of the student since he has the necessary data.

( ) ( ) ( ) ( ) ( ) 25. Competition among students develops conceit, selfishness, and envy.

( ) ( ) ( ) ( ) ( ) 26. A teacher should discuss his blunders and learnings with students.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 27. A teacher should be sure his questions steer students toward truth.

( ) ( ) ( ) ( ) ( ) 28. Educational objectives should define changes in behavior which the student desires and the teacher helps him undertake.

( ) ( ) ( ) ( ) ( ) 29. Most students are able to keep their emotions under good control.

( ) ( ) ( ) ( ) ( ) 30. Students are quite competent to choose and carry out their own projects for learning.

( ) ( ) ( ) ( ) ( ) 31. A teacher should help students free themselves of fixed habits and patterns of thought that block their growth.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 32. The major qualifications of a teacher are grasp of subject matter and ability to explain (demonstrate) it clearly and interestingly.

( ) ( ) ( ) ( ) ( ) 33. It is better for students to create their own learning activities and materials than for the teacher to provide them.

( ) ( ) ( ) ( ) ( ) 34. A teacher should require assignments and grade them.

( ) ( ) ( ) ( ) ( ) 35. Use of a topical outline course plan often blocks a teacher's perception of students' needs.

( ) ( ) ( ) ( ) ( ) 36. An adult education program should be evaluated only in terms of its own objectives.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 37. Competition among students develops courage, determination, and industry.

( ) ( ) ( ) ( ) ( ) 38. A teacher should provide opportunities for warm relationships with students and among students.

( ) ( ) ( ) ( ) ( ) 39. Education should lead people to goals that result in orderly, reasonable lives.

( ) ( ) ( ) ( ) ( ) 40. Education should increase students' critical evaluation of our society and courage to try new, creative, satisfying behavior.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 41. Often students don't know what is best for them.

( ) ( ) ( ) ( ) ( ) 42. When a teacher makes a mistake, he is likely to lose students' respect.

( ) ( ) ( ) ( ) ( ) 43. Maturity depends more on continuing growth in self-understanding than on growth in knowledge.

( ) ( ) ( ) ( ) ( ) 44. Students frequently "get off the subject" either intentionally or unintentionally.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 45. Education programs which tell what should be learned and how rarely help students learn.

( ) ( ) ( ) ( ) ( ) 46. Letting students determine learning objectives wastes too much time in irrelevant discussion.

( ) ( ) ( ) ( ) ( ) 47. The primary concern of a teacher should be the immediate needs of the student.

( ) ( ) ( ) ( ) ( ) 48. Grades should reflect a students' grasp of the subject or skill taught.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 49. Assignments by a teacher tend to restrict students' significant learnings.

( ) ( ) ( ) ( ) ( ) 50. Tests prepared by students are usually just as effective as those prepared by a teacher.

( ) ( ) ( ) ( ) ( ) 51. The goals a student sets for himself are the basis of effective learning not the teacher's goals.

( ) ( ) ( ) ( ) ( ) 52. A teacher's mission is to help each student learn what he decides will aid him in achieving his personal goals.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 53. If a teacher isn't careful, students take advantage.

( ) ( ) ( ) ( ) ( ) 54. Considering the possible effects on students, a teacher should usually play it safe rather than take chances.

( ) ( ) ( ) ( ) ( ) 55. Without a cooperative climate encouraging students to risk and experiment, significant learning is unlikely.

( ) ( ) ( ) ( ) ( ) 56. A teacher who does not plan the work for a class carefully is taking advantage of the students' ignorance.

SA A U D SD

( ) ( ) ( ) ( ) ( ) 57. To use students' experiences and resources for learning requires group activities rather than such methods as lectures.

( ) ( ) ( ) ( ) ( ) 58. It is a good rule in teaching to keep relationships with students impersonal.

( ) ( ) ( ) ( ) ( ) 59. Planning units of work should be done by students and teacher together

( ) ( ) ( ) ( ) ( ) 60. Good teaching is systematic - set up a clear plan and schedule and stick to it.

APPENDIX B

EDUCATIONAL ORIENTATION QUESTIONNAIRE (EOQ)

11/21/75

Scoring Sheet

PEDAGOGICAL ITEMS SA = 1, A = 2 U = 3, D = 4 SD = 5	ANDRAGOGICAL ITEMS SA = 5, A = 4, U = 3, D = 2, SD = 1
1. ___	2. ___
3. ___	4. ___
5. ___	6. ___
7. ___	8. ___
9. ___	10. ___
11. ___	12. ___
13. ___	14. ___
15. ___	18. ___
16. ___	22. ___
17. ___	24. ___
19. ___	25. ___
20. ___	26. ___
21. ___	28. ___
23. ___	30. ___
27. ___	31. ___
29. ___	33. ___
32. ___	35. ___
34. ___	36. ___
37. ___	38. ___
39. ___	40. ___
41. ___	43. ___
42. ___	45. ___
44. ___	47. ___
46. ___	49. ___
48. ___	50. ___
53. ___	51. ___
54. ___	52. ___
56. ___	55. ___
58. ___	57. ___
60. ___	59. ___
Tot ___ +	___ = ___ Total Raw Score

STANDARDIZED TOTAL SCORE

Total Raw Score = _____

Subtract 210.8

Algebraic (+ or -) Remainder _____

Divide Algebraic Remainder by 26 (or more accurately by 25.924)

_____ ÷ 26 (or 25.924)
Algebraic Remainder

= _____ Standardized Score

Percent of Adult Educators with EOQ Scores Less than or Greater Than Your Score (Standardized)

Your Score	% of Scores Less	Your Score	% of Scores Greater
- 1.0	15.87	+ 1.0	15.87
- 1.5	6.68	+ 1.5	6.68
- 2.0	2.28	+ 2.0	2.28
- 2.5	0.62	+ 2.5	0.62
- 3.0	0.13	+ 3.0	0.13

For example: If your standardized score is + 1.5, then, in the theoretical population of all adult educators, 6.68 percent will have a score more andragogically oriented (Larger) than yours or, alternatively, 93.32 percent will have a score more pedagogically oriented (Less) than yours.

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APPENDIX B

PERFORMANCE BASED ADULT VOCATIONAL EDUCATION PROJECT

Directions: Please answer the following questions to the best of your ability. Your responses will be used to determine the content of subsequent in-service education meetings, as well as to assess the effectiveness of this workshop.

1. Please list seven characteristics of adult learners that are different from the characteristics of adolescent learners.

   1.

   2.

   3.

   4.

   5.

   6.

   7.

2. Please list four common problems encountered by the instructor in teaching adult learners.

   1.

   2.

   3.

   4.

3. What is the best measure to determine the success of a unit of instruction?

4. What basic assumption should be made when a student undertakes an instructional program and has difficulty completing the program?

5. Should all students completing a course of instruction be able to perform at a minimum level of performance?

   (Circle One) Yes No

6. If it were your responsibility to decide the content of a new short course, what would be the first question you would need to ask?

7. How do you know as an instructor that a student has learned?

8. The first step in planning effective instruction is to:

   ____ a. Research all the available resources for teaching.

   ____ b. Make a lesson plan.

   ____ c. List an assortment of strategies to use in teaching.

   ____ d. Define the predicted end results of the instruction.

9. Please indicate the purpose of the <u>pretest</u> in performance based instruction.

10. Please indicate three advantages of using performance based instruction rather than using traditional types of instruction.

    1.

    2.

    3.

11. Write the full name of the anacronym <u>V-TECS</u>.

12. Define the following terms as they relate to V-TECS catalogs.

    a. Criterion reference measure

    b. Task

    c. Duty area

    d. Performance objective

    e. Performance guide

13. Please indicate the fundamental difference between the V-TECS catalogs and other performance based catalogs used throughout the State of Alabama.

14. What is the primary goal of the Performance-based Adult Vocational Education Project (PAVE)?

APPENDIX C

Instructors' Training Plan

APPENDIX C

AGENDA FOR PAVE WORKSHOP

Holiday Inn, Civic Center
Birmingham, Alabama
December 9 and 10, 1976

Thursday, December 9, 1976

11:00 - 1:00 Registration

1:00 - 1:15 Introduction of Staff and Summary of Project - Dr. Douglas Patterson

Workshop participants will be able to:

1. Identify and name PAVE staff.
2. Explain in writing the anacronym PAVE.
3. List the primary goal of the PAVE project.
4. Differentiate the three experimental groups and two phases of the project.

1:15 - 1:30 Objectives of Workshop - Mr. Mickey Humphries

Workshop participants will be able to:

1. Define performance based instruction.
2. List five characteristics of performance based instruction.
3. Define instructors' role in performance based instruction.
4. Define learners' role in performance based instruction.

2:15 - 3:15 Deriving Occupationally Valid Objectives - Mr. James Kendrick

Workshop participants will be able to:

1. Describe how the performance objectives in the V-TECS catalog were selected and validated.
2. Analyze an objective and identify the skills and knowledges necessary for its accomplishment.

3:15 - 3:45 Break

Workshop participants will be able to return from break refreshed, rewatered, relaxed, with 100% return.

3:45 - 5:00 Adult Learners - Dr. Harry Frank

Workshop participants will be able to:

1. List seven characteristics of adult learners that distinguish them from adolescent learners.
2. List four common problems encountered by the instructor in teaching adult learners.
3. List four teaching strategies (methods) which are appropriate for addressing the common problems listed in objective two.
4. Identify five environmental conditions which are conducive to learning by adult learners.
5. Identify five characteristics of an effective instructor of adult learners.

5:00 - 6:00 Break

6:00 - 7:00 Dinner

7:00 - 7:45 Data Collection - Dr. Lawrence Walters

Workshop participants will be able to:

1. List five steps to be followed by instructors in collecting the pretest data.
2. Explain in writing the use of forms 1-4;6.
3. Explain in writing the procedure used in collecting posttest data.

7:45 - 8:45 Instructional Process - Mrs. Norma Brewer

Workshop participants will be able to:

1. Explain in writing the use of form 5.
2. List three classroom management techniques an instructor should use when many classroom activities are being conducted concurrently.

8:45 - 9:00 Summary of Thursday's Activities and Review of Friday's Activities - Mr. Mickey Humphries

Friday, December 10, 1976

8:00 - 8:30 Review of PAVE System and Summary of Friday's Activities - Dr. Douglas Patterson

8:30 - 11:30 Development of Instructional Material - Small Groups

Workshop participants will be able to develop instructional material using the V-TECS catalogs.

11:30 - 12:00 Summary and Workshop Posttest

APPENDIX C (Continued)

NINE ADVANTAGES OF PERFORMANCE-BASED INSTRUCTION

1. Learning tasks called competencies are clearly stated in performance terms so that the learner knows in advance exactly what he/she is expected to achieve.

2. Criteria used to assess competencies are based on performance objectives, specified in advance, and made known to the learners. Hence, the learner knows exactly how he/she will be evaluated.

3. Learners are frequently provided immediate feedback concerning their progress, resulting in almost continuous reinforcement.

4. Program design allows for more individualization and personalization of instruction:

   a. learners progress at their own learning pace or rate

   b. learners choose among alternative and optional activities

   c. learners have more opportunity to pursue their own learning style

   d. evaluation occurs when the learner is ready

   e. learning experiences are tailor-made to meet learners' needs and interests

5. A large share of the responsibility for learning is shifted from the instructor to the learner.

6. Emphasis is placed on the learner's ability to perform rather than only on the learner's knowledge of teaching as assessed by the paper and pencil method.

7. Instruction is performance-based rather than course-based or time-based.

8. Emphasis is on exit requirements rather than on entrance requirements.

9. Assessment of the learner's competency strives for objectivity, and is criterion-referenced rather than norm-referenced.

APPENDIX C (Continued)

Performance-Based Educational Program

Performance-based vocational education programs are programs in which the performance objectives are specified, and agreed to, in rigorous detail in advance of instruction. Learners know what they are expected to be able to do before they complete the program and what standards of workmanship will be demanded of them. Each learner is held accountable not for simply achieving passing grades, but for attaining at least a given minimum acceptable level of competency in performing the essential tasks of the occupation. The learner must demonstrate his/her competency by performing the task while the instructor rates the performance, using a checklist or other objective measure.

Because learners have a great range of abilities, learning styles, and motivation, some will take longer than others to achieve the required competencies. To allow each learner to progress at his/her own rate, it therefore, may become necessary to individualize the instruction.

The learners will be considered as having successfully completed the program when, and only when, they have demonstrated their ability to perform the competencies.

APPENDIX C (Continued)

LEARNING THEORY IMPLICATIONS FOR ADULT EDUCATION

1. Learning should be problem-centered.

   (A student not an instructor-problem)

2. Learning should be experience-centered.

   (Instructor should be knowledgeable of the student's backlog of experience)

3. Learning experience should be meaningful to the student.

   (The learning experience must be suited to the student's capacity to perceive, readiness, and capacity to understand)

4. The student must be free to look at the experience.

   (The learning climate should be pleasurable, permissive, supportative, accepting, free, spontaneous, reality-centered or person-centered. The student must be adjusted emotionally to the learning situation, the instructor, the fellow students and to the learning climate)

5. The student should take self-inventory and help set goals.

   (For maximum learning the student must interact with other students in such a way as to expose his attitudes, gaps in knowledge and skills to himself and to others)

6. The student must have feedback about progress toward goals.

   (Initial evaluation and progress toward goals is highly important. Some knowledge of success or failure is neccessary in the functional feedback process)

COMPETENCIES OF THE ADULT EDUCATOR

The actual rating of forty-five statements of competency found in the article titled Competencies of Adult Educators, found in Adult Education Volume XI, Number 2, Winter 1961.

1. Believes that there is potentiality for growth in most people.
2. Is imaginative in program development.
3. Can communicate effectively - speaks and writes well.
4. Has an understanding of the conditions under which adults are most likely to learn.
5. Is himself learning.
6. Is an effective group leader.
7. Knows himself - his values, his strengths and weaknesses.
8. Has an open mind - is willing to accept others' ideas.
9. Has an understanding of what motivates adults to participate in programs.
10. Has a strong commitment to adult education.
11. Can organize and direct complex administrative activities.
12. Has an understanding of the structure of the community, its organization and grouping.
13. Has developed a system of values about adult education.
14. Believes that innovation and experimentation are necessary to the development of the field.
15. Believes in freedom of thought and expression.
16. Has an understanding of the problems and principles of administration.
17. Can carry through procedures of evaluation of his program.
18. Can organize learning situations.
19. Is capable of formulating the criteria for selecting teachers and lay leaders.
20. Believes he should develop and learn throughout life.
21. Believes that participants should help make program decisions.
22. Has an understanding of the processes involved in group or community change.
23. Is effective as a member of a group.
24. Believes in a responsive and responsible citizenry.
25. Can effectively deal with differences in people who come from a variety of backgrounds.
26. Can use the techniques of promotion and publicity effectively.
27. Has an understanding of the theories which relate to the method of adult education.
28. Has an understanding of the processes involved in attitudinal change.
29. Can apply democratic principles to everyday life.
30. Has confidence in his ability as an adult educator.
31. Has an understanding of the democratic process as applied to daily living.
32. Can apply generalizations to specific situations.

33. Desires to be a responsible leader of his profession.
34. Understands the changes in physiological, mental, and social development throughout the life span.
35. Has an understanding of the group process - the dynamics of group behavior.
36. Recognizes the existence of the developmental tasks of adulthood such as marriage, raising a family, preparation for retirement.
37. Believes in the effectiveness of group energy and group action.
38. Can plan and conduct research in matters relating to his field.
39. Can carry on self-directed study.
40. Understands the history and organization of adult education.
41. Can perform as a professional consultant and counselor.
42. Believes group methods of instruction have special relevance for adults.
43. Can use the mass media as an educational means.
44. Is competent in a particular discipline or field of study.
45. Believes that tested and accepted methods of carrying on programs of adult education are best.

APPENDIX C (Continued)

CHECKLIST FOR TEACHERS OF ADULTS

	QUITE WELL	SO-SO	NEED IMPROVEMENT
Do I know my pupils - their backgrounds, abilities, and interests?	_____	_____	_____
Do I know the school program?	_____	_____	_____
Do I know the school policies regarding graduation requirements, attendance, credit, work experience, etc.?	_____	_____	_____
Do I know the faculty, the clerical staff, and the available specialists in school?	_____	_____	_____
Do I know the community agencies available in my locality, and their services?	_____	_____	_____
Do I know information sources on occupations and educational opportunities?	_____	_____	_____
Do I maintain informal and objective notes on important observations made of students?	_____	_____	_____
Do I create the feeling that I am interested in each student as a person and would like to cultivate his friendship?	_____	_____	_____
Do I give careful attention to physical conditions in the classroom, such as lighting, seating, acoustics?	_____	_____	_____
Do I provide ample opportunities for group participation?	_____	_____	_____
Am I successful in developing a classroom group that will encourage a student when he does well and give help when he needs it?	_____	_____	_____

APPENDIX C (Continued)

	QUITE WELL	SO-SO	NEED IMPROVEMENT
Are class members successful in discovering each other's strong points and in helping all students to show their abilities?	_____	_____	_____
Do I watch for potential dropouts and students who seem to have little interest?	_____	_____	_____
Have I invited school specialists, such as counselors and psychologists to visit my classroom so that students may know them and their services?	_____	_____	_____
Have I helped the students in the class learn techniques and methods of solving educational, school, and emotional problems objectively?	_____	_____	_____
Do I use cooperative planning procedures in the classroom?	_____	_____	_____
Have the students learned ways to appraise and evaluate their own work?	_____	_____	_____

A N D R A G O G Y

NOT PEDAGOGY!

Dr. Malcolm S. Knowles, Professor of Education and
General Consultant in Adult Education, Boston University

Address made by Dr. Knowles at the Delbert Clark Award Banquet
West Georgia College

Adult education is, I believe, on the threshold of a major technological breakthrough. To support this belief, let me examine three propositions with you and then make a proposal. The first proposition I would like to make to you is that where adult education, historically, has been a kind of luxury and secondary activity in our culture, as of 1967, I believe that the education of adults is rapidly becoming a central concern, a central need of our civilization. The reason for this change is growing realization that unless we do something fast to get adults growing and adapting and learning to live in a new kind of world, man is in danger of becoming obsolete. Technologies of work acquired in the teens are increasingly archaic by the time individuals have reached their forties. But even more tragically, social attitudes, values, and relationships that are progressive in one decade are decadent in the next. Clearly, the very survival of civilization requires that systematic learning continue beyond youth. And this is the first time in history that this is so.

A second proposition I would like to make to you is that adult education, particularly in this country, has undergone an enormous growth in the last decade, both in the number of people it is touching and in the number of institutions that are identifying adult education as a primary activity. Adult education is now big business. Enormous sums are being spent by the government, by educational institutions, by business and industry, and by voluntary agencies for adult education. Adult education is no longer suffering from marginality. It is no longer suffering from being a peripheral activity in our society. More adults are engaged in education than ever before in history. So, my second proposition is that we are talking about something that is already very substantial but is still growing explosively.

But now, a third proposition I want to make to you is that adult education has been relatively ineffective up to this point in accomplishing its mission. It has not done its job, it has not made the kind of difference in the basic attitudes, basic world views, basic approaches to life, that I think it is capable of and that I think is required of it if our civilization is to survive. So I now ask you to envision the untapped future potential for adult education as a whole field and for adult education at individual institutions.

Now, how can I stand here, a missionary for adult education, a defender of adult education, and say I think it has goofed? Very simply, I think the biggest obstacle to the achievement of the full potential of adult education has been that it has been tied to and it has been hamstrung by the concepts and the methods of the traditional education of children. Isn't it true what we who teach adults know about teaching, we have learned either from being taught as children, or having been taught to teach children? What we know is pedagogy, which is a word that comes from the same stem as "pediatrics" -- the Greek word "paeda," meaning child. All education has been equated with pedagogy -- the art and science of teaching children. Even in our own literature you will find references to the "pedagogy of adult education." Although semantically a contradiction, this phrase is descriptive of an unfortunate reality. For the fact is that most adult teaching has consisted of teaching adults as if they were children. This has been our hamstring.

But now things are changing. We have been accumulating a growing body of insights and knowledge from both research and experience. We have learned that adults are different from children as learners in certain very critical ways. And we have been developing a new technology -- methods, techniques, and materials -- that is tailored to these unique characteristics of adults as learners. Furthermore, we have started, first in Europe and now in America, to give a new label to this technology to distinguish it from the technology of pedagogy. This new label is "andragogy," which is derived from the Greek word "andros," meaning "man" or "grownups." As I see it now, this new technology of andragogy -- the art and science of helping adults to learn -- is based on certain crucial assumptions about the difference between children and adults as learners. (Now let me just in parenthesis say that I believe many of the things which we have learned about how to help adults learn better also apply to children; and those of you who are teaching at the elementary, secondary, and college levels should keep your ears open, because there may be some things that you would find applicable to working with children. After all, children are in the process of becoming adults, and the characteristics of adulthood start developing at various points during childhood and youth.) Perhaps as many as a dozen assumptions about these differences constitute the theoretical foundation of andragogy, but let's simply illustrate the process by which a new technology comes into being by examining only three of them.

The first and by far the most important difference between adults and youths as learners, I believe, is that of their self-concept. A child first sees himself as a completely dependent personality. He sees himself in his first consciousness as being completely dependent upon the adult world to make his decisions for him, to feed him, to change his diapers, and to see where the pin is sticking. During the course of his childhood and youth, that dependence is reinforced as decisions are made for him in the home, at school, in church, on the playground, and everywhere he turns. But at some point he starts experiencing the joy of deciding things for himself, first in little matters and then in more important ones, and by adolescence he is well along the way toward rebelling against having his life run by the adult world. He becomes an adult psychologically at the point at which his concept of himself changes from one of dependency to one of autonomy. That's what I think we mean psychologically by adultness. To be adult means to be self-directing. Now at the point at which this change occurs, there develops in the human being a deep psychological need to be perceived by himself and by others as being indeed self-directing. An we tend to resent and resist being put into situations in which we feel that others are imposing their will on us. This is the concept that I think lies at the heart of this new technology of andragogy. Andragogy is based upon the deep insight that the deepest need an adult has is to be treated as an adult, to be treated as a self-directing person, to be treated with respect.

What is the technology that comes out of this concept? I can think of several implications. I think a first implication is the great importance of the provision of a climate in a community or in an institution that smacks of adultness. Now, how is a climate of adultness established? Well, let's take this climate here. What are the characteristics of this atmosphere that make you feel either childish or adult? All right, one is a physical setup in which you are comfortable and can talk with one another in informal groups. The chairs aren't in rows facing a podium. Another is that you could choose where you would sit -- you had freedom of choice; another is that you were given dignified name cards so that people could identify you as a unique individual. I'm sure we could go on and build a long list, but we have illustrated that the symbols of childness that adults react to most negatively are regimentation, lack of respect for them as unique persons, being talked down to lack of concern for human needs such as comfort, and depersonalization of relationships. These kinds of things may sound awfully trivial; but to a person who feels that his adultness is disrespected, these are very important. They are symbols of how he is perceived, and if he feels he is perceived like a child, his resentment will get in the way of his learning.

I think a second implication for this new technology of adult education has to do with who diagnoses what I should learn. It is a very critical question to me as an adult whether I determine what I need or

whether some authority figure is going to tell me what I need to learn. Now, one of the rich areas of ferment in our field is the invention of new approaches to what I think of as self-diagnosis. Some very imaginative procedures are being invented for involving the adult in performing, then looking at his performance in comparison with other people's performance, and finally making his judgement about where his own strengths and weaknesses are. Such activities as role playing, critical incident process, simulation exercises, skill practice exercises, group observation, and self-rating scales, are used for this purpose. Engaging of the adult in the diagnosing of his own needs for learning is a very important part of the technology of andragogy.

A third element in this technology has to do with the planning process. Traditionally, all the planning of student learning is done by the teachers, or by the curriculum committee, or by the State Department of Education. In adult education, responding to this deep need to be self-directing, a great deal of attention is beginning to be paid to ways of involving the adults meaningfully and relevantly in the planning of their own learning. At the simplest level, is the creation of representative planning groups of some sort, committees or councils. It is my observation that those programs that involve their participants in planning what they will learn and how they will learn it are much richer and more vital than those that do not. But I have a hunch that we could find better ways of doing this, and I think that several institutions are in a good position to do some more pioneering in this direction.

Probably an even more important implication, in terms of andragogy, is the involvement of adults in the carrying out of their own learning -- in engaging in mutual self-directed inquiry. I have been doing quite a bit of experimenting in Boston University with my graduate classes using what I call learning-teaching teams. We have the students organize themselves into teams, each of which takes responsibility for learning all it can about a unit of a subject and then sharing what they have learned with the rest of the students, with faculty members serving as a resource to the teams. I have made several discoveries from this experience. For one thing, students listen a lot more attentively to their fellow students than they do to me. Their eyelids start drooping after about fifteen minutes when I try to do all the teaching, but when a fellow student team gets up to share what they have learned, their ears stay flopping for a good hour. So, I think better learning takes place when you involve the learners in teaching each other. Secondly, it makes a lot of difference in their ego-involvement. Do they get hooked! For example, I have never assigned a page of required reading in my adult education life, but with these learning-teaching teams, I have a long bibliography of references that might be helpful to them. The loudest complaint which I have received came from my faculty colleagues concerning the amount of reading I make my students do. The fact is that

in engaging in their own self-directed inquiry they get so deeply involved that other things become less important to them.

Finally, an implication of the concept of being self-directing has to do with evaluation. Probably the most crushing blow to any self-respecting human being is the act of another person giving him a grade. This is not evaluation in educational terms; in fact, it has nothing to do with learning. If anything, I think it is anti-learning. Evaluation, according to andragogy, is really a repetition of the process diagnosis that I described before as self-diagnosis. Evaluation andragogically is really re-self diagnosis. What we do at the end of a learning experience with adults, according to andragogical principles, is to engage them in a process of re-assessing the remaining gaps between the competencies they want to have and the competencies they do have. So the techniques of evaluation according to andragogy are the same as the techniques of self-diagnosis that I described earlier.

A second characteristic in which children differ from adults is in experience. Adults have accumulated more experience than children and youths by virture of having lived longer. Adults are richer resources for learning. But this difference in experience goes deeper than mere quantity. A curious phenomenon occurs regarding how a person feels about his experience. Experience to a youth is something that happened to him -- a series of almost external events. If you ask him who he is, he will define his self-identity in terms of his family, his school, his community, etc. -- the identity that has been given to him from outside. But an adult will define himself in terms of his experience. His self-identity is derived from what he has done. Accordingly, we adults are very jealous of the worth of our experience, and wherever we find people devaluing our experience, not paying attention to it, not incorporating it in the educational plan, we feel rejected as people. It is not just our experience that is being devalued; if teacher doesn't make use of my experience in a classroom, I, Malcolm Knowles, am being devalued, because my experience is me. And those of you who are working in basic education know this is even doubly true of under-educated people, because what else do they have but their experience?

Consequently, andragogy is shifting from transmittal techniques toward experimental techniques. This is not to say that we do not use transmittal techniques as the most effective means for accomplishing a given educational objective. But there has been a marked shift away from such transmittal techniques as lectures, assigned reading, even canned audio-visual presentation, to experimental techniques that make use of the learner's experience, such as simulation exercises, laboratory training, case method, critical incident process, community action projects, and the wide variety of discussion techniques. "Action learning" and "participative learning" are printed in bold face in the lexicon of andragogy.

Third, adults and youth differ in their time perspective. In most aspects of life, a youth's time perspective is one of immediacy. A youth has a very hard time postponing the satisfaction of present desires. He can't wait to get that candy bar or that ice cream bar; he wants it now. With adults it is the opposite. In most aspects of life, adults are accustomed to saving for the Christmas fund and vacation and all that sort of thing. But in regard to learning, the time perspective of children and adults is reversed. In regard to education, youth's time perspective is one of postponed application. Almost all of what I learned in grade school and in high school -- and in fact in college -- I learned not with much hope that it would be very useful then, but that it would accumulate into a reservoir of knowledge and skills that would be useful when I got to be an adult. My orientation to learning as a youth was one of postponed application, and therefore, my attitude toward learning was subject-centered. If you had asked me what I was learning I would have rattled off subject matter titles: history, government, religion, mathematics, language, and do on. I would have said I am learning subject matter.

But an adult's time perspective in regard to learning is one of immediate application. The reason an adult enters into education is to be able to better deal with some life problem about which he feels inadequate now. He wants to learn something tonight that will help him better deal with some of his problems tomorrow. As a result, an adult's orientation to education is problem-centered. If you ask an adult what he is learning, he will almost always use a verb and a phrase describing a life problem: "I am learning to be a better mother or a better supervisor," or "I'm learning to speak more fluently, or to converse more brilliantly, or to vote more intelligently."

One technological implication of this difference is that the organizing principle for the curriculum of adult education involves problem areas rather than subject categories. In adult education across the country, the curriculum for adults looks increasingly different from the curriculum for youth. Let me give you some of the labels that we are using in adult education: "Education for Aging," "Supervisory Training," "Management Development," and "Liberal Education." Contract these with such subject categories of youth education as "Science," "Philosophy," "Language," "History," "English," and the like.

Another technological implication of this difference is the importance in the actual learning experience of starting the learning with the problems and concerns that the learners bring in with them. The first thing that adult educators typically do in a classroom situation is to take a problem census. They have their adult students identify what it is that they are curious about or worried about or concerned about. Then they build a learning program around these curiosities and concerns. Accordingly, andragogy is a student-centered, problem-oriented technology.

When you get right down to it, this is the way the education of children should be, too. Perhaps West Georgia College's next pioneering contribution will be to demonstrate that college undergraduates also learn better under conditions which take into account their emergent adultness. Then adult education can truly become continuing education.

Selected Principles of Adult Teaching

1. The adult should understand the goal.
2. There should be a desirable social atmosphere.
3. The physical environment should be conducive to learning.
4. The instructor should know his subject matter
5. Each student should be shown how he may progress.
6. The adults should be given a feeling of accomplishment.
7. The methods of teaching should be varied.
8. The instructor should know his methods.
9. The general points should be illustrated in terms of background of the adults.
10. The adults background should be used to enrich the course.
11. The adults should have an opportunity to participate.

APPENDIX D

PAVE GUIDE

APPENDIX D

PERFORMANCE-BASED ADULT VOCATIONAL EDUCATION

A CURRICULUM RESEARCH PROJECT CONDUCTED BY THE

STATE OF ALABAMA
DEPARTMENT OF EDUCATION
WITH A GRANT FROM
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APPENDIX D

The PAVE SYSTEM

Douglas Patterson, Director
Mickey Humphries, Research Associate
Lawrence Walters, Research Associate
Norma Brewer, Research Associate
James Kendrick, Project Coordinator
Woodrow Buckelew, Project Coordinator

806 State Office Building
Montgomery, Alabama 36130
December 1, 1976

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INTRODUCTION

Changing technology in Alabama and throughout the nation compels adults to continue to upgrade their occupational skills or develop new ones to secure and hold employment. Adults are struggling for educational opportunities which will afford them social and economic security. The demand for adult education services are being thrust upon every type of educational institution and agency.

Regardless of the type of institution or the type of educational program, adults demand practical content and learning procedures. The instruction must produce useful knowledge or skills to be acceptable to the adult learner.

Vocational instructional programs should produce the knowledge and skills required in the occupation. The PAVE System is designed to produce an instructional program which will result in the adult learner acquiring the knowledges and skills required in the occupation. This system will also enable the learner to acquire these necessary knowledges and skills with maximum efficiency of time and effort.

The PAVE System utilizes the performance-based learning concept. The purpose of the instruction is to develop within the learner the ability to perform previously identified tasks. Both the learner and instructor understand the purpose of the learning activity. Time and effort are not expended on unnecessary learning activity. A learner's abilities are assessed prior to instruction, and the instructional program is then designed according to the results of the preassessment. Learners are not required to relearn skills and knowledges that they already know or are able to perform. Finally, both learner and instructor can recognize when the purpose of the instruction has been achieved.

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The PAVE System provides for an approach to performance-based instruction from occupationally valid tasks. Catalogs of occupationally valid tasks developed by the Vocational Technical Education consortium of States (V-Tecs) comprise the content base of the PAVE System. Tasks listed in the V-Tecs catalogs have been determined through extensive research and review by vocational teachers and workers on the job.

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MANAGEMENT OF THE PAVE SYSTEM

The Performance-based Adult Vocational Education (PAVE) Guide is designed to assist instructors in establishing the PAVE System. There are two major components of the PAVE System: the PAVE Guide, which contains directions for implementing the system, and selected tasks from the research-based V-TECS catalogs.

The PAVE System is designed to assist the instructor step-by-step through the process of utilizing tasks from the research-based V-TECS catalogs to provide performance-based instruction to the adult learner. The system may be used in providing performance-based instruction to an individual adult learner or to a group of adult learners. The PAVE System is also designed to provide data needed for assessing the effectiveness of the system in providing performance-based instruction.

Importance of PAVE Guide

Each instructor is urged to carefully read the PAVE Guide before attempting to implement the system. All major activities of the system have been arranged in flow chart form. The chart is called Activities Chart for Progression Through the PAVE System and is found on page 11 of this guide. The purpose of the chart is to allow instructors to determine at any moment exactly where the learner is in the system. There are ten steps on the Activities Chart. Each of the ten steps is dependent upon a preceding one; therefore, continuity throughout the system is important. Instructors MUST know each step and/or its alternative and MUST follow very carefully the direction for each step.

There are several special features of the PAVE System which contribute to its uniqueness. These special features include utilizing tasks from the research-based V-TECS catalogs, conducting a systematic initial assessment of learners'

skills, using progress checks, administering criterion-referenced measures, and recording learner accomplishment. Each of these features is described briefly in the following paragraphs.

V-TECS Catalogs

The research which identified the tasks included in the V-TECS catalogs also identified performance objectives for each task, defined "final exams," known as criterion-referenced measures, by which attainment of the performance objectives can be measured, and suggested a number of possible steps a learner might progress through in developing competence in a particular task. The suggested steps are referred to as performance guides. These three components---performance objectives, criterion-referenced measures, and performance guides---from the V-TECS catalogs are utilized in the PAVE System.

Initial Assessment of Skills - Entry Performance Demonstration (EPD)

The instructor is to complete the first four steps on the Activities Chart during the first class meeting. These steps include an initial assessment of skills the learner possesses at the beginning of the course. The learner is given a list of all tasks to be taught during the course and is asked to indicate those which he/she can already perform. In Step V, the learner is provided an opportunity to demonstrate the competence in each of those tasks he/she already knows. Each initial demonstration of skills will be referred to as an Entry Performance Demonstration (EPD). Administration of the EPD's is very important, for only by this means can the learner be assured that instruction will not be repeated over material which he/she can already perform. Instructors are encouraged to complete the EPD's as early in the course as possible. However, all EPD's for any specific task MUST be completed before instruction is begun on that particular task.

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Use of Progress Checks

Traditional methods of instruction often include periodic assessment of learners. Too often the learner is penalized if he/she does not perform the assessment (test) at a high level of performance. Performance-based instruction requires the instructor to administer numerous progress checks to determine whether or not the learner is acquiring the skills and knowledges necessary for meeting the performance objective. Progress checks may be either instructor checks or learner self-checks. Learners may be directed to complete a short paper-pencil test, compare their performance to a recognized standard, or may simply have their performance visually inspected by the instructor. If a learner does not satisfactorily perform a progress check, the difficulty is diagnosed, and the learner is redirected to the appropriate place in the instructional sequence. The learner proceeds through the instructional process and receives progress checks as an aid in meeting the performance objective and not as a penalty for which he/she receives a grade.

Use of Criterion-Referenced Measures

After the learner has completed the instructional process and performed all progress checks for a task, he/she is asked to perform the complete task as specified in the performance objective for that task. This final performance and the standard to which it should be achieved is called the "Criterion-Referenced Measure." The term "Criterion-Referenced Measure" (CRM) is used in all V-TECS catalogs and is used in this guide to indicate a type of "final exam" for each task. If a learner has performed all progress checks, he/she should have no trouble performing the CRM. Therefore, progress checks serve as an instructional aid in helping learner acquire the skills and knowledges necessary to perform CRM's.

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Criterion-referenced measures must be performed at the level stated in the performance objective. Before a learner takes a CRM, he/she should practice the entire task and should be confident in performing the task. Criterion-referenced measures are administered when the instructor is sure that the learner is completely prepared for the performance test.

Record of Learner Achievement -- Master Sheet (Form 3)

The Master Sheet, Form 3, is a large single copy form which has been designed to assist the instructor in recording the progress of all learners. The Master Sheet contains a list of all tasks which are to be taught in the course. The instructor enters the name of each learner. As a learner successfully performs each task, that is, completes the CRM, the date is recorded in the appropriate column. If the task is completed during the Entry Performance Demonstration (EPD), only the letters EPD are entered.

Use of the Instructional Planning Sheet (Form 5)

The V-TECS catalogs are designed to identify the tasks and levels of performance needed on the job. The catalogs, however, were not designed to include suggested strategies for teaching these tasks. One of the expected contributions of the PAVE Project is to determine the amount and type of planning an instructor must do in order to utilize V-TECS catalogs in performance-based instruction. Therefore, it is important that instructors document the planning and teaching process.

The concept of performance-based instruction leads ultimately to individualized, self-paced learning. The objectives of the PAVE Project require as much individualized learning as can be implemented at this time. The PAVE System has been designed to aid the instructor in moving toward individualized learning within the capabilities of his/her own system.

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Form 5, "Instructional Planning Sheet," has been developed to serve two purposes: (a) as an aid in the planning process, and (b) as a means of providing a degree of individualized learning. Form 5 should be developed by the instructor and made available to the learner. Before the instructional process begins, each instructor must examine the tasks to be taught, sequence them into a logical teaching order, identify related knowledges and skills, determine the appropriate learning experiences and resource materials to be used, and define the number and type of periodic progress checks. On Form 5, progress checks should be written very explicitly and stated in performance terms in order for the learner to know exactly what he/she will be expected to demonstrate at the time of the progress check. Thus, when Form 5 is completely filled out, a learner should be able to know the assignments or other exercises to be completed, the materials that will be used, and exactly what will be demonstrated in the way of periodic progress checks as well as at the time of the CRM. NOTE: One copy of Form 5 for each task will be collected by the project staff and will be used by them in developing an instructional model for each task.

A sample of Form 5 and additional information for completing and using the form is included in Appendix A.

SUMMARY

Instructors must read and carefully follow all steps in this guide. Before any major departure is made from the directions in this guide, instructors should contact the PAVE staff at 832-3450. The success of this study is primarily dependent upon the instructors and their support of the project. By carefully following the PAVE Guide, instructors help assure a meaningful and productive project.

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Purposes of the PAVE Project

- To develop performance-based instruction in adult vocational education classes using Vocational-Technical Education Consortium of States (V-TECS) research based materials as a guide.
- To assess the application of performance-based research products being developed by V-TECS in the development of adult vocational education programs.

Objectives of the PAVE Guide

To enable the instructor to:

- read and understand the sequence of steps outlined in the activities chart
- guide adult learners through the sequence of steps outlined in the activities chart
- utilize the forms required in the PAVE System
- develop instructional material to implement performance-based instruction
- collect data required by PAVE Project

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TO THE INSTRUCTOR:

Please read this at the beginning of the first class and to all adult learners who join the class after the first night.

NOTICE TO ADULT LEARNERS

This class is being conducted in cooperation with a research project in vocational education. A certain amount of data will be collected for the purposes of the research project. However, all data will be aggregated into group data and no individual names or individual data will be identifiable or kept beyond the end of the project.

The purpose of this course is to provide learning experience for the occupational area of _____.

This course is open to all interested adults regardless of color, race, national origin, or sex.

NOTE!!!

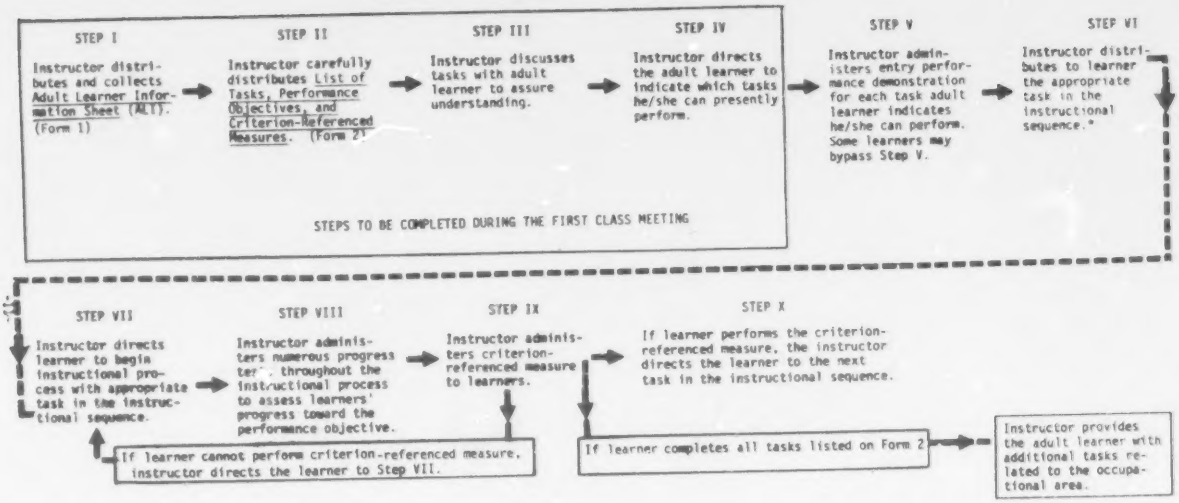
Questions may arise at this point from some adult learners. Be prepared to present the project and the required data in such a manner as to assure that it appears as non-threating as possible to the learners.

APPENDIX D

ORGANIZATION OF THE Pave System

APPENDIX D

ACTIVITIES CHART FOR PROGRESSION THROUGH THE PAVE SYSTEM


STEP I
Instructor distributes and collects Adult Learner Information Sheet (ALI). (Form 1)
STEP II
Instructor carefully distributes List of Tasks, Performance Objectives, and Criterion-Referenced Measures. (Form 2)
STEP III
Instructor discusses tasks with adult learner to assure understanding.
STEP IV
Instructor directs the adult learner to indicate which tasks he/she can presently perform.
STEP V
Instructor administers entry performance demonstration for each task adult learner indicates he/she can perform. Some learners may bypass Step V.
STEP VI
Instructor distributes to learner the appropriate task in the instructional sequence.*
STEPS TO BE COMPLETED DURING THE FIRST CLASS MEETING
STEP VII
Instructor directs learner to begin instructional process with appropriate task in the instructional sequence.
STEP VIII
Instructor administers numerous progress tests throughout the instructional process to assess learners' progress toward the performance objective.
STEP IX
Instructor administers criterion-referenced measure to learners.
STEP X
If learner performs the criterion-referenced measure, the instructor directs the learner to the next task in the instructional sequence.
If learner cannot perform criterion-referenced measure, instructor directs the learner to Step VII.
If learner completes all tasks listed on Form 2
Instructor provides the adult learner with additional tasks related to the occupational area.

* The appropriate task is dependent upon which task(s) learner is able to perform during entry performance demonstrations.

APPENDIX D

SUMMARY OF ACTIVITIES IN STEPS I THROUGH IV TO BE COMPLETED DURING THE FIRST CLASS MEETING

The instructor should complete the following activities in any order in which he/she wishes:

- read "Notice to Adult Learners" on page 9 of the PAVE GUIDE.
- distribute and collect Form 1, Adult Learner Information Sheet.
- review applicable policies of school, classroom, and shop.
- provide orientation to course.
- provide orientation to facilities, equipment, and supplies.
- distribute, discuss, and collect Form 2, List of Tasks.
- discuss and demonstrate the use of Form 5, Instructional Planning Sheet.

ACTIVITIES TO BE COMPLETED DURING THE SECOND CLASS MEETING AND THEREAFTER

The instructor should complete the following activities in any order in which he/she wishes:

- begin entry performance demonstrations with tasks that learners circled on Form 2, List of Tasks.
- introduce Form 5, Instructional Planning Sheet, as appropriate and discuss how it will be used.
- begin the instructional process.

APPENDIX D

STEP I

INSTRUCTOR DISTRIBUTES AND COLLECTS ADULT LEARNER INFORMATION Sheet (ALI). Form 1

- the instructor reads Notice to Adult Learners
- the instructor distributes to the adult learner the ALI Sheet. (See next page)
- the adult learner completes the ALI Sheet and returns it to the instructor.
- the instructor uses the ALI Sheets for preparing the class roster on the Master Sheet.
- the instructor retains all ALI Sheets until collected by a PAVE staff member. (Will be picked up during visitation).
- the instructor reviews the entire course with learners. Their orientation to course should include:
    - orientation to school facilities and equipment, policies of school as they relate to adult course, and other information as appropriate.
    - brief explanation of how this course differs from traditionally taught courses, e.g. use of entry performance demonstration, self-paced, periodic demonstration of skills, recording of progress, etc.

NOTE!!!

It is imperative that all adult learners complete an ALI Sheet regardless of when they enroll.

APPENDIX D

PAVE PROJECT

FORM 1

ADULT LEARNER INFORMATION

1. Your Name _____

2. Name of Course _____

3. Name of Instructor _____

4. Your Sex Male( ) Female( )

5. Your Age 15-19( ) 20-29( ) 30-39( )
   40-49( ) 50-59( ) 60 or older( )

6. Your Race Caucasian( ) Black( ) Oriental( ) Other( ) _____

7. Are you presently employed? Yes( ) No( )
   If yes, fulltime or parttime? Fulltime( ) Parttime( )
   If you are working, is your job related to this course? Yes( ) No( )
   If yes, please give job title _____
   If yes, how long have you been employed in this type of work? _____

8. Number of formal adult education courses taken prior to this course.
   0( ) 1-2( ) 3-4( ) 5 or more( )

9. Reason for enrolling in this course:
   Prepare for potential employment( ) Upgrading present job skills( )
   Other( )

10. How did you find out that this course was being offered?

APPENDIX D

STEP II

THE INSTRUCTOR CAREFULLY DISTRIBUTES TWO COPIES OF LIST OF TASKS, PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES. (FORM 2)

For Entry Performance Demonstration Purposes:

- the instructor carefully distributes to the adult learners two copies of Form 2, LIST OF TASKS, PERFORMANCE OBJECTIVES, AND CRITERION-REFERENCED MEASURES. (See sample form, on the next page)
- the adult learner writes his/her name and the date in the designated space.
- the instructor moves to Step III.

NOTE!!!

Some adult learners may be reluctant to indicate that they can perform a task when in fact they actually are able to perform the task. Instructors must present the tasks in such a manner that NO adult learner is intimidated or made to feel that he/she will be required to perform the task in front of the class or in any manner that may embarrass the learner.

NOTE!!!

Two copies of Form 2 are used in order that the adult learner may keep one for his/her reference and the instructor may have one for planning and data recording purposes.

PAVE PROJECT

FORM 2

LIST OF TASKS, PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES

NAME John Doe DATE December 5, 1976 COURSE Radio/TV

TASK NO.	TASK	PERFORMANCE OBJECTIVE	CRITERION-REFERENCED MEASURE	DATE ASSIGNED	DATE COMPLETED	NO. OF TIMES CRM TAKEN	TOTAL TIME
1	Check and/or replace tube(s) in the color I.F.	Given a color TV set suspected of having a faulty tube in the color I.F., the appropriate schematic and manufacturer's specifications, and the proper equipment and supplies, check and if faulty, replace the color I.F. tubes. If the tubes check good, reported checks must match manufacturer's specifications. Replacement of tubes must restore color to peak efficiency.	Check and if faulty, replace any defective color I.F. tube(s) in the set provided by your instructor.				
2	Check AC Voltage Input to Power Transformer	Given a TV set, a VTVM, and the appropriate schematic and manufacturer's specifications, check the AC voltage to the primary of the transformer. Your voltage reading must match manufacturer's specifications. If they do not, all voltage checks must be verified and approved.	Check the AC voltage to the primary of the transformer provided by your instructor.				

SAMPLE

APPENDIX D

INFORMATION SHEET

FOR FORM 2

NOTE!!!

Form 2 is a very useful instrument and can be used by both the instructor and the adult learner.

Form 2 can be used in one or more of the following ways:

- a part of the initial assessment of skills which the learner can use in indicating the task number of those tasks which he/she can perform.
- an information sheet for the adult learner to use during entry performance demonstration. This has been described in Step V.
- a study guide for the adult learner so that he/she is aware of which tasks, performance objectives, and criterion-referenced measures will be included in the course.
- a planning guide for the adult learner to chart his/her own progress through the course by notating the date the task was assigned, the date finished, number of times the criterion-referenced measure was taken and the total amount of time involved.
- a progress sheet for use by instructor in recording when a learner begins a task, completes it, number of times the criterion-referenced measure was given and the length of time, by hours, it took from the assignment of the task to its completion. The category for the total time involved is for informational purposes only.

NOTE!!!

Instructors may want to consider developing an individual file folder for each adult learner to record performance test results.

APPENDIX D

STEP III

USING FORM 2, LIST OF TASKS, PERFORMANCE OBJECTIVES, AND CRITERION-REFERENCED MEASURES, INSTRUCTOR IS ENCOURAGED TO DISCUSS TASKS WITH ADULT LEARNERS TO ASSURE THAT LEARNER UNDERSTANDS TASKS.

Instructors will:

- discuss with adult learners the terminology used on Form 2 to assure that the learner understands tasks, performance objective, and criterion-referenced measure*
- instruct adult learners to read tasks and performance objectives on Form 2
- instruct adult learners to decide which tasks they can perform
- move to Step IV

* *Adult learners must understand the meaning of the three terms-- tasks, performance objective, and criterion-referenced measure and must be provided with whatever information is necessary for them to make a decision regarding which tasks they can presently perform.*

TASK. A unit of work activity or operation that constitutes a logical and necessary step in the performance of a duty.

PERFORMANCE OBJECTIVE. A statement in precise, measurable terms of a particular behavior to be exhibited by a learner under specified conditions. It possesses each of the elements or characteristics specified below:

a. Condition -- The situation confronting the learner is clearly specified. This includes equipment provided or withheld, environmental constraints such as temperature, space, etc.

b. Performance -- The specific behavior expected of the learner is stated.

c. Standard -- The degree of acceptable performance is specified. This may be quantitative, qualitative, or both. If quantitative, 100% proficiency is assumed unless otherwise stated. In the standard, " ... locate shorts in an ignition system." If qualitative, the standard is explicitly stated, e.g., " ... measure the bearing to within .005 of that found by the instructor." If the measure of quality is highly subjective, the instructor is assumed to be the judge of acceptable performance unless otherwise stated. This judgement may be made using a checklist, or it may be strictly a "go, no-go" decision.

CRITERION-REFERENCED MEASURE. An exercise based upon a performance objective, the accomplishment of which measures attainment of that objective.

APPENDIX D

STEP IV

USING FORM 2, LIST OF TASKS, PERFORMANCE OBJECTIVES, AND CRITERION-REFERENCED MEASURES, ADULT LEARNERS ARE ASKED TO INDICATE WHICH TASK(S) THEY CAN PRESENTLY PERFORM.

For Entry Performance Demonstration Purposes the Instructor will:

- instruct the adult learner to circle on two copies of Form 2 the number(s) of the task(s) that he/she can presently perform.

NOTE!!!

Learner should circle the task number with a pencil.

- collect one copy of Form 2 from adult learners
- review Form 2 to determine whether the adult learner moves to Step V or Step VI.

IF

The adult learner circles a task number, he/she moves to STEP V.

IF

The adult learner does not circle a task number, he/she moves to STEP VI.

APPENDIX D

STEP V

For those adult learners directed to this step from Step IV.

INSTRUCTOR ADMINISTERS ENTRY PERFORMANCE DEMONSTRATIONS FOR EACH TASK ADULT LEARNERS INDICATE THEY CAN PERFORM.

The Instructor:

- refering to the circled tasks on Form 2, LIST OF TASKS, PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES, chooses any task for the entry performance demonstration.

NOTE!!!

Instructors may decide the order in which the circled tasks may be demonstrated by learners. The order will be determined by many factors including the number of learners circling certain task number(s), availability of equipment, time required to administer performance demonstration for certain tasks, etc.

- administers the entry performance demonstration to the adult learner. Using Form 4, RECORD OF PERFORMANCE DEMONSTRATION, the instructor records the results.

NOTE!!!

In order for the learner to "pass" the entry performance demonstration, the learner must perform the demonstration as specified in the performance objective.

- continues to administer entry performance demonstrations to learners until all performance demonstrations have been administered. The instructor must administer an entry performance demonstration for every task that a learner indicated that he/she can presently perform.

NOTE!!!

Learners may be unable to perform some of the tasks they have circled. These tasks will be included in their instruction in the future.

APPENDIX D

STEP V Continued

All tasks that the learner was able to perform successfully will not be included in the instructional process.

If a learner successfully performs an entry performance demonstration, the instructor should record the results on Form 4, Record of Performance Demonstration. (See sample below)

The letters "EPD" should be marked on the Master Sheet, Form 3 for each task a learner performs during the entry demonstration. The letters "EPD" should also be marked in the column "Date Assigned" on Form 2.

NOTE!!!

If a learner does not "pass" the entry performance demonstration for a task, instructor should erase the circle for that task on instructor's copy of Form 2. Instructor should know at all times which entry performance demonstration learners have performed or not performed.

PAVE PROJECT

Form 4

RECORD OF PERFORMANCE DEMONSTRATION

Directions to instructor: Record on this sheet ONLY the names of learners who perform tasks at the criterion-level of performance and the number or name of the tasks performed. Record tasks which are performed as part of the entry performance demonstration (EPD) as well as tasks performed during the instructional phase. Use a separate Form 4 for each class meeting. Transfer all information to the appropriate Form 2 (LIST OF TASKS ...) and to Form 3 (MASTER SHEET).

Date of Class Meeting _____

Name of Learner	Task Number	Task Name	Check here if demonstration is part of an EPD

APPENDIX D

STEP VI

INSTRUCTOR DISTRIBUTES TO ADULT LEARNERS THE APPROPRIATE TASKS IN THE INSTRUCTIONAL SEQUENCE.

The Instructor:

- will assign task in the instructional sequence by giving to the learner Form 5.

NOTE!!!

Although the tasks are numbered consecutively, instructors may teach tasks in any sequence that seem to be most effective.

- will determine by questioning if the adult learner understands how to use Form 5. If he/she does not understand it, the instructor should review and explain the purpose and use of the form.

NOTE!!!

This should be the second time the use of Form 5 is reviewed with learner. A thorough explanation of its purpose and use should be conducted during the first class meeting.

APPENDIX D

STEP VII

INSTRUCTIONAL PROCESS BEGINS WITH APPROPRIATE TASK IN THE INSTRUCTIONAL SEQUENCE.

Instructor will:

- instruct the learner to carefully proceed through Form 5 until he/she reaches a Progress Check, at which time the learner should move to Step VIII.

NOTE!!!

Instructors are reminded that with this type of instruction learners may be working on different tasks at the same time. The instructor should anticipate this and have a completed Form 5 on each task.

APPENDIX D

STEP VIII

INSTRUCTOR ADMINISTERS TO LEARNER NUMEROUS PROGRESS TESTS THROUGHOUT THE INSTRUCTIONAL PROCESS TO ASSESS LEARNER"S PROGRESS TOWARD THE PERFORMANCE OBJECTIVE.

Instructor will:

- administer periodic Progress Checks throughout the instructional process to assess learner's progress through the learning process.

IF

Learner cannot pass a Progress Check then instructor must diagnose difficu'ty encountered by learner, and if necessary recycle the learner to appropriate place in instructional process.

IF

Learner completes Progress Check satisfactorily, he/she moves to next step in Form 5.

When learner has completed all Progress Checks and Steps in Form 5, he/she moves to Step IX.

APPENDIX D

STEP IX

INSTRUCTOR ADMINISTERS CRITERION-REFERENCED MEASURE.

Instructor will:

- provide learner with sufficient time to practice the entire task prior to the criterion-referenced measure.

NOTE!!!

One of the basic principles of performance-based instruction is that learners not take a criterion-referenced measure until the learner has adequately practiced the entire task.

- administer criterion referenced-measure to learner after he/she has finished all study and laboratory assignments and has practiced the entire task. If the learner successfully performs the test, the instructor should record the results on Form 4, Record of Performance Demonstration.

IF

Learner does not pass criterion-referenced measure,

Instructor should diagnose the difficulty and direct the adult learner back to the appropriate place in the instructional process.

IF

Learner performs criterion-referenced measure,

Learner is directed to next task in Instructional Sequence, Step X.

IF

Learner completes ALL tasks listed on Form 2,

The instructor must provide the adult learner with enough additional tasks related to the occupational area to complete the course.

NOTE!!!

The instructor is reminded to mark the date that criterion-referenced measures are successfully performed by learners on Form 2, List of Tasks, and Form 3, Master Sheet.

APPENDIX D

STEP X

IF ADULT LEARNER PERFORMS CRITERION-REFERENCED MEASURE, INSTRUCTOR DIRECTS LEARNER TO NEXT TASK IN INSTRUCTIONAL SEQUENCE.

Instructor will:

- give to adult learner Form 5 for next task in instructional sequence.

NOTE!!!

This step begins the instructional process again. Instructors should refer back to Step VI and follow the logical sequence of Steps VI through IX.

APPENDIX D

APPENDIX A

SAMPLE OF
INSTRUCTIONAL PLANNING SHEET

FORM 5

PAVE PROJECT
FORM 5
INSTRUCTIONAL PLANNING SHEET

COURSE: _____ DUTY: _____

TASK: _____ V-TECS CAT. PAGE NO. ____

PERFORMANCE OBJECTIVE:

NECESSARY KNOWLEDGES AND SKILLS*	LEARNING ACTIVITY	RESOURCES (MEDIA & MATERIALS)	PROGRESS CHECK

*The Performance Guides in the V-TECS catalog may be helpful in identifying these.

FORM 5 (Continued) Page ___ of __ V-TECS CAT. PAGE NO. ____

NECESSARY KNOWLEDGES AND SKILLS	LEARNING ACTIVITY	RESOURCES (MEDIA & MATERIALS)	PROGRESS CHECK

APPENDIX D

INFORMATION SHEET FOR FORM 5

The instructor will use Form 5, Instructional Planning Sheet, to determine the necessary knowledges and skills, learning activities, resources and progress checks to be used in the instructional process for each task.

To complete the planning sheet, the instructor will:

- determine the knowledges and skills necessary to perform the task. The performance guides, included with each task in the V-TECS catalogs, could serve as a basis for determining these skills.
- determine the learning activities that may be used for the learner to develop the previously identified knowledge or skill. These learning activities may be demonstrations by the instructor, study assignments, laboratory or shop practice, etc.
- determine what resources (materials or media) are necessary for the learner to perform the learning activity. Resources may include books, magazines, manuals, study sheets, etc. or the viewing of audio-visual materials (films, slides, tapes, etc.)
- determine the number and type of progress checks. These may be instructor checks (short written quizzes, visual inspection, verbal explanation to instructor, etc.) or self-checks (responding to questions in study assignments, comparison of work with standardized samples, etc.). Progress checks should be planned at appropriate intervals throughout the learning process. It is important that the results of each progress check be made known to the learner immediately. This would lead to the discovery of any difficulties the learner may be having and enable the instructor to correct it at that point. Both learner and instructor should be aware of the learner's progress throughout the course.
- plan Form 5 so that the learner can practice the entire task (number 4 on the sample sheet). This activity provides the learner with the opportunity to practice the task prior to the CRM. The last learning activity planned for the learner will be the CRM.

NOTE!!!

The instructor should prepare at least three copies of Form 5 for each task. One copy will be collected by the PAVE staff. One copy will be for the instructor's use. The remaining copy(ies) should be made accessible to learners. These could be posted in a classroom or shop near where certain tasks may be practiced, or placed in a convenient file for reference by the learner, or provided as handouts when a learner is ready to begin the instructional sequence for a given task. The number of copies required for use by the learners will be determined by each instructor.

PAVE PROJECT
FORM 5
INSTRUCTIONAL PLANNING SHEET

COURSE: BOE DUTY: Perform Mail Activities

TASK: Place Postage on Outgoing Mail, Using Postage Meter V-TECS CAT. PAGE NO. 96

PERFORMANCE OBJECTIVE: Given 10 pieces of mail, a postage scale, and postage meter, place the correct amount of postage on each piece of mail. Performance must be in accordance with postal regulations.

NECESSARY KNOWLEDGES AND SKILLS*	LEARNING ACTIVITY	RESOURCES (MEDIA & MATERIALS)	PROGRESS CHECK
1. Knowledge of postal regulations regarding - First-class mail - Second-class mail - Third-class mail - Fourth-class mail - Air mail - Priority mail - Special delivery	1. "Postal Regulations" pp. 24-30	1. (a) Postage tables for all types of mail (b) Ten copies of "Postal Regulations."	1. (a) Describe to instructor the general criteria for all classifications of mail. (b) Locate in "Postal Regulations" exact reference for handling two examples of priority mail. (c) Use postage tables and determine correct postage for 6 different pieces of mail.
2. Operation of Postage Scale	2. (a) Demonstration by Instructor (b) Practice by Learner	2. (a) Postage Scales for Letters and Parcels (b) Assorted sizes of simulated mail	2. (a) Correctly weigh 6 different pieces of mail.
3. Operation of Postage Meter	3. (a) "Postage Meter Operators Manual" pp. 1-4. (b) Demonstration by Instructor. (c) Practice by learner (d) "Postal Regulations" pp. 35-36"	3. (a) Postage Meter (b) Three copies of "Postage Meter Operators Manual	3. (a) Set postage meter to correctly print all information required by postal regulations. (b) Print and affix two postage labels. (c) Describe to instructor routine maintenance procedures needed on meter. Demonstrate as appropriate.

Sample

*The Performance Guides in the V-TECS catalog may be helpful in identifying these.

NECESSARY KNOWLEDGES AND SKILLS	LEARNING ACTIVITY	RESOURCES (MEDIA & MATERIALS)	PROGRESS CHECK
	4. The learner practices entire activity 5. The learner performs the CRM		4. The instructor checks the performance of the learner. 5. Criterion-Referenced Measure (CRM). Your instructor will provide mail and equipment; affix correct amount of postage to each piece of mail.

Sample

APPENDIX E

Descriptive Data of PAVE Participants

APPENDIX E

TABLE 1

AGE OF PARTICIPANTS IN PAVE PROJECT, BY GROUP AND SUBJECT

Group/Subject	PHASE I							PHASE II						
	Number Responding	Age Group (Years) % in Age Group						Number Responding	Age Group (Years) % in Age Group					
		15-19	20-29	30-39	40-49	50-59	60 & +		15-19	20-29	30-39	40-49	50-59	60 & +
Group 1	127	15.0	46.5	19.7	12.6	6.3	--	80	23.8	32.5	16.3	12.5	13.8	1.3
Group 2	144	18.1	42.4	20.8	13.2	4.9	0.7	51	3.9	39.2	27.5	13.7	15.7	--
Group 3	86	19.8	38.4	26.7	14.0	1.2	--	74	32.4	20.3	31.1	12.2	2.1	1.1
Auto Body	64	18.8	62.5	14.1	4.7	--	--	58	34.5	41.4	13.8	10.3	--	--
Auto Mechanics	59	33.9	42.4	5.1	15.3	3.4	--	19	31.6	26.3	15.8	10.5	15.8	--
Radio & TV	49	6.1	46.9	16.3	18.4	12.2	--	28	7.1	25.0	10.7	21.4	32.1	3.6
Business & Office	80	10.0	40.0	28.8	16.3	3.8	1.3	44	15.9	20.5	36.4	18.2	9.1	--
Welding	105	18.1	31.4	33.3	12.4	4.8	--	56	17.9	28.6	35.7	7.1	8.9	1.8
TOTAL	357	17.4	42.9	21.9	13.2	4.5	0.3	205	22.0	30.0	24.4	12.7	10.2	1.0

APPENDIX E

TABLE 2

SEX OF PARTICIPANTS IN PAVE PROJECT, BY GROUP AND SUBJECT

Group/Subject	PHASE I			PHASE II		
	Number Responding	Sex		Number Responding	Sex	
		Male	Female		Male	Female
		% in Each Sex			% in Each Sex	
Group 1	129	89.2	10.8	82	100.0	--
Group 2	143	63.6	36.4	51	60.8	39.2
Group 3	86	83.7	16.3	79	69.6	30.4
Auto Body	64	100.0	--	62	100.0	--
Auto Mechanics	59	100.0	--	20	65.0	35.0
Radio & TV	50	98.0	2.0	30	100.0	--
Business & Office	79	1.3	98.7	44	15.9	84.1
Welding	106	99.1	0.9	56	100.0	--
TOTAL	358	77.6	22.4	212	79.3	20.7

APPENDIX E

TABLE 3

RACE OF PARTICIPANTS IN PAVE PROJECT, BY GROUP AND SUBJECT

Group/Subject	PHASE I					PHASE II				
	Number Responding	Race				Number Responding	Race			
		White	Black	Oriental	Other		White	Black	Oriental	Other
		% of Each Race					% of Each Race			
Group 1	127	85.8	14.2	--	--	80	85.0	13.8	1.2	--
Group 2	143	58.0	39.9	0.7	1.4	51	43.1	56.9	--	--
Group 3	84	90.5	9.5	--	--	73	93.2	--	6.8	--
Auto Body	62	80.7	19.3	--	--	56	78.6	21.4	--	--
Auto Mechanics	59	66.1	33.9	--	--	20	65.0	35.0	--	--
Radio & TV	48	93.8	6.2	--	--	28	85.7	10.7	3.6	--
Business & Office	80	47.5	51.3	--	1.3	44	50.0	38.6	11.4	--
Welding	105	91.4	6.7	1.0	1.0	56	98.2	1.8	--	--
TOTAL	354	75.7	23.5	0.3	0.6	204	77.5	19.6	2.9	--

APPENDIX E

TABLE 4

EMPLOYMENT STATUS OF PAVE PARTICIPANTS AND RELATIONSHIP OF EMPLOYMENT TO SUBJECT, BY GROUP AND SUBJECT

Group/Subject	PHASE I					PHASE II				
	Number Responding	Employment Status		Relationship		Number Responding	Employment Status		Relationship	
		Unemployed	Employed	Related	Unrelated		Unemployed	Employed	Related	Unrelated
		% of Respondents		% of Employed			% of Respondents		% of Employed	
Group 1	129	19.4	80.6	44.7	55.3	78	20.5	79.5	43.5	56.6
Group 2	143	23.1	76.9	25.7	74.3	51	25.5	74.5	23.7	76.3
Group 3	86	20.9	79.1	19.4	80.6	70	31.4	68.6	14.0	86.0
Auto Body	64	18.7	81.3	15.7	84.3	57	26.3	73.7	12.2	87.8
Auto Mechanics	59	20.3	79.7	17.4	82.6	19	31.6	68.4	18.8	81.2
Radio & TV	50	4.0	96.0	37.5	62.5	28	21.4	78.6	45.5	54.5
Business & Office	79	50.6	49.4	28.2	71.8	39	46.2	53.8	28.6	71.4
Welding	106	9.4	90.6	44.2	55.8	56	10.7	89.3	38.0	62.0
TOTAL	358	21.2	78.8	31.2	68.8	199	25.6	74.4	28.7	71.3

APPENDIX E

TABLE 5

LENGTH OF TIME EMPLOYED IN WORK RELATED TO SUBJECT, BY GROUP AND SUBJECT

Group/Subject	PHASE I						PHASE II					
	Number in Category	Length of Employment					Number in Category	Length of Employment				
		1-5 yrs	6-10 yrs	11-15 yrs	16-20 yrs	20 + yrs		1-5 yrs	6-10 yrs	11-15 yrs	16-20 yrs	20 + yrs
Group 1	45	44.4	33.3	6.7	11.1	4.4	27	44.4	18.5	18.5	--	18.5
Group 2	26	53.8	34.6	3.8	7.7	--	8	50.0	--	37.5	12.5	--
Group 3	16	56.2	25.0	12.5	6.2	--	6	36.4	18.2	--	--	--
Auto Body	9	66.7	33.3	--	--	--	6	50.0	16.7	33.3	--	--
Auto Mechanics	9	77.8	22.2	--	--	--	2	100.0	--	--	--	--
Radio & TV	16	56.2	12.5	12.5	12.5	6.3	11	36.4	--	27.3	9.1	27.3
Business & Office	11	72.7	18.2	--	9.1	--	5	50.0	--	--	--	--
Welding	42	31.0	45.2	9.5	11.9	2.4	17	35.3	41.2	11.8	11.8	--
TOTAL	87	49.4	32.2	6.9	9.2	2.3	41	48.8	17.1	19.5	2.4	12.2

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TABLE 6

NUMBER OF ADULT COURSES PREVIOUSLY TAKEN BY PAVE PARTICIPANTS, BY GROUP AND SUBJECT

Group/Subject	PHASE I					PHASE II				
	Number Responding	Number of Courses				Number Responding	Number of Courses			
		0	1-2	3-4	5+		0	1-2	3-4	5+
		% in each category					% in each category			
Group 1	113	54.9	33.6	5.3	6.2	73	50.7	35.6	5.5	8.2
Group 2	131	65.7	21.4	3.8	9.2	49	57.1	30.6	8.2	4.1
Group 3	83	73.5	21.7	3.6	1.2	73	79.5	9.6	9.6	1.4
Auto Body	55	52.7	32.7	5.5	9.1	53	69.8	22.6	3.8	3.8
Auto Mechanics	57	66.7	26.3	7.0	--	17	64.7	23.5	5.9	5.9
Radio & TV	47	53.2	34.0	2.1	10.6	28	32.1	39.3	10.7	17.9
Business & Office	74	78.4	17.6	--	4.1	42	73.8	14.3	11.9	--
Welding	94	62.8	23.4	6.4	7.5	55	63.6	27.3	7.3	1.8
TOTAL	327	63.9	25.7	4.3	6.1	195	63.1	24.6	7.7	4.6

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TABLE 7

REASONS GIVEN BY PAVE PARTICIPANTS FOR ENROLLING IN COURSE, BY GROUP AND SUBJECT

Group/Subject	PHASE I				PHASE II			
	Number Responding	Reasons for Enrolling			Number Responding	Reasons for Enrolling		
		Prepare for Employment	Upgrade Skills	Other		Prepare for Employment	Upgrade Skills	Other
		% in each category				% in each category		
Group 1	129	34.1	41.1	24.8	75	36.0	36.0	28.0
Group 2	140	47.9	23.6	28.6	51	39.2	35.3	25.5
Group 3	84	45.2	26.2	28.6	74	33.8	13.5	52.7
Auto Body	63	27.0	27.0	46.0	54	38.9	25.9	35.2
Auto Mechanics	58	39.7	20.7	39.7	19	36.8	5.3	57.9
Radio & TV	49	30.6	38.8	30.6	28	25.0	42.9	32.1
Business & Office	78	76.9	19.2	3.9	44	56.8	15.9	27.3
Welding	105	32.4	42.9	24.8	55	21.8	38.2	40.0
TOTAL	353	42.2	30.6	27.2	200	36.0	27.5	36.5

APPENDIX E

TABLE 8

WAYS PAVE PARTICIPANTS FOUND OUT ABOUT COURSE, BY GROUP AND SUBJECT

Group/Subject	PHASE I						PHASE II					
	Number Responding	Source of Information					Number Responding	Source of Information				
		Newspaper	Referal	Radio	Contact School	Other		Newspaper	Referal	Radio	Contact School	Other
		% in each category						% in each category				
Group 1	124	31.5	37.9	9.7	6.5	14.5	70	47.1	35.7	8.6	1.4	7.1
Group 2	142	33.8	38.7	6.3	11.3	9.9	50	28.0	30.0	--	18.0	24.0
Group 3	86	40.7	34.9	3.	12.8	8.1	73	28.8	49.3	12.3	9.6	--
Auto Body	63	19.1	42.9	17.5	14.3	6.4	53	26.4	54.7	11.3	1.9	5.7
Auto Mechanics	57	15.8	50.9	1.8	21.1	10.5	18	33.3	50.0	--	16.7	--
Radio & TV	49	55.1	18.4	12.2	6.1	8.2	28	82.1	10.7	--	--	7.2
Business & Office	80	53.8	36.3	1.3	3.8	5.0	43	37.2	25.6	14.0	20.9	2.3
Welding	103	30.1	36.9	4.9	7.8	20.4	51	17.7	47.1	5.9	7.8	21.6
TOTAL	352	34.7	37.5	6.8	9.9	11.1	193	35.2	39.4	7.8	8.8	8.8

APPENDIX F

INTRODUCTION TO PERFORMANCE-BASED INSTRUCTION IN VOCATIONAL EDUCATION

Wayne Teague
State Superintendent

T. L. Faulkner, Director
Vocational Education

Division of Vocational Education
State Department of Education
State Office Building
Montgomery, Alabama 36130

1977-1978

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This text is one of the series on developing performance-based instruction. Other areas covered in the series are:

Occupational Analysis
Structure and Use of Alabama V-TECS Catalogs
Developing Performance Objectives and Criterion-Referenced Measures
Instructional Planning
Selection/Development of Instructional Materials
Validation
Adaptive Instruction
Accountability

It is the official policy of the Alabama State Department of Education, including postsecondary institutions under the control of the State Board of Education, that no person in Alabama shall, on the grounds of race, color, handicap, sex, religion, creed, national origin, or age, be excluded from participating in, be denied the benefits of, or be subjected to discrimination under any program, activity, or employment.

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FOREWORD

Performance-based instruction, perceived as a means of improving vocational education in Alabama, is a process which incorporates the following features into each program or course.

- The course content is based on occupational research which reflects what workers in any given job are actually doing. When instruction is based on such occupational data, students will be trained to do what is actually being done on the jobs.

- The instruction is designed so that the emphasis is on teaching to do rather than just verbalizing or theorizing. This does not mean that job-related knowledges and theories must be left out, but rather that all teaching content is directly related to developing job competency.

- The instruction is student-centered. In traditional approaches, the instruction has often been centered around the teacher and the subject matter. But in performance-based instruction all methods, media and activities are centered around the needs of the student. The primary need of the students in vocational education is to learn a trade or occupation which will prepare them for employment.

- The student performance is measured against attainment of job-relevant objectives, not in comparison with the performance of other students. Prospective employers are not necessarily interested in how students rank according to norm-referenced test results; they are more interested in whether students can do those tasks required of the job.

Performance-based instruction, however, is not an attempt to reinvent the wheel. Of course, many instructional programs already have some of its features, and many instructors are already applying some of the principles. It is not a movement to throw out all that has been done and start from scratch. Rather it is a way to make good programs even better and a logical and systematic way to develop new programs.

This publication was designed to present the major concepts of performance-based instruction for use by teachers, supervisors, and administrators. Teachers can benefit from an understanding of the features and principles of performance-based instruction. Supervisors and administrators, as well as teachers, can benefit from the model for development in Chapter 3 and from the evaluation guidelines in Chapter 4.

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DEVELOPING PERFORMANCE OBJECTIVES AND CRITERION-REFERENCED MEASURES FOR PERFORMANCE-BASED INSTRUCTION IN VOCATIONAL EDUCATION

Wayne Teague
State Superintendent

T. L. Faulkner, Director
Vocational Education

Division of Vocational Education
Alabama State Department of Education
State Office Building
Montgomery, Alabama 36130

1977 - 1978

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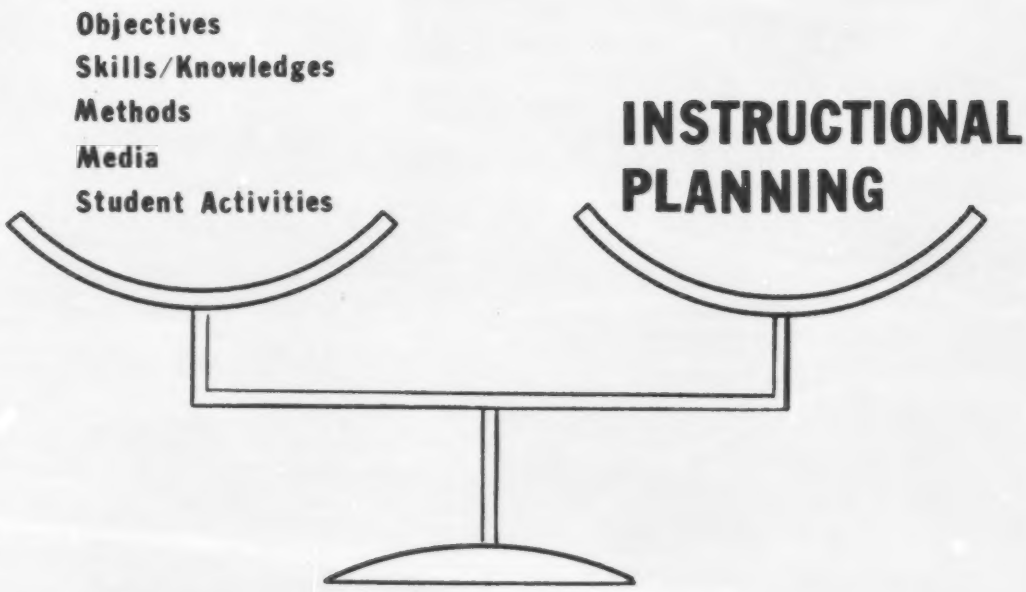

Division of Vocational Education
State Department of Education
State Office Building
Montgomery, Alabama

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